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Cerebral Palsy

Edna M. Blumenthal, B. S.

The problem of diagnosis and treatment of cerebral palsy patients until quite recently was one about which there was very little detailed knowledge. Today we are more fortunate because scientific investigations have given us new and valuable information. We shall limit our time to the discussion of three factors that have given us increased knowledge. First to be taken into consideration is the complex picture that an individual handicapped by this condition presents. The second point, which is of utmost importance, is the treatment technic necessary to obtain desired results. The third factor is the time element and expense involved in the physical rehabilitation and education of cerebral palsy patients.

Early History of Cerebral Palsy

In any special field a brief summary of the pioneer work will throw some light on the problems that confront us today. At this point it seems expedient to spend a few minutes on the development of progress with this particular branch of disabling conditions.

Doctor Little, in 1862, saw his first case of what was called spastic paralysis, and described the individual as feebleminded, drooling, with little or no speech, not much use of arms, and a toe-walker, with cross-legged gait. Unfortunately for progress in study, this description was recorded in textbooks and for years was generally accepted as typical of the condition. Even more detrimental to enthusiastic research was the prognosis of these cases described by Doctor Little. His idea was to place severe cases in an institute for feebleminded while mild cases were told they would outgrow the condition. Because this description was accepted and little or no progress was made in the study of cerebral palsy, many and varied procedures were tried with disheartening results in most instances. As other methods proved themselves futile the necessity of physical rehabilitation became obvious.

The pioneer work done in muscle reeducation by Miss Mary Trainor of Children's Hospital in Boston, Massachusetts, is of utmost importance. In the face of opposition and perhaps even ridicule, she retained her optimism and hope. Her ingenious devices to accomplish the ends she had in mind are known to everyone interested in cerebral palsy.

In 1918, Dr. Winthrop M. Phelps expressed his doubts concerning the mental deficiency of these patients. A survey conducted among leading educators and psychologists showed that mental tests were not adapted to the motor and speech disabilities of the child handicapped by cerebral palsy. Since all former tests were based on manual dexterity and speech it is very easy to understand that the child with cerebral palsy was automatically "licked" from the beginning.

For twenty-three years Phelps has maintained his keen interest in these cases. Through constant study and research he has clarified many

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of the early problems and has developed a technic of treatment that is looked upon with great interest and hope by professional people as well as the general public. The main purpose of this paper, in as far as possible, is to simplify and clarify the problem in the light of Phelps' methods of procedure.

CEREBRAL PALSY PRESENTS COMPLEX PICTURE

In the last few years, cerebral palsy surveys have been made all over the country and the results are astounding. According to statistics[1] approximately seven cerebral palsy cases are born each year per 100,000 population. It has been shown also that not more than two of these children are likely to be truly mentally deficient and perhaps not more than one of the seven will die before attaining adult life. This means that in a city of 100,000 people there will be 96 cerebral palsy patients under the age of 16. To help clarify the complex picture patients with cerebral palsy can be classified into three main types: athetoids, spastics and ataxias. Each of these types have certain physical and psychological reactions that are characteristic of the group.

The athetoid type will be considered first. There are two types of athetosis the first of which is the nontension athetoid who makes wild involuntary motions without any blocking or resistance of other muscles. The second—tension athetoid—attempts to stop or block these athetoid motions by tensing the antagonistic muscles and persists in doing this for years until, finally, the tension becomes habitual. The fact to keep in mind is that tension originally is voluntary but through persistent use has become habitual. The treatment for both types is identical and will be described later.

The second type of cerebral palsy is seen in the individual with spastic paralysis. This type presents a complicated picture because three types of muscular disorder may be found in one individual. The diagnostic symptom of spastic paralysis, according to Phelps, is the "stretch reflex." This is an unusual condition and with a little care and practice a physical therapist can learn to detect spasticity. A spastic muscle will contract as soon as it is put on a stretch. This may be due to the stretching effect caused by contraction of the antagonistic muscles or it can be produced manually. The classical example seems to be the biceps brachii. If the biceps is spastic any attempt to produce extension will cause a blocking or tightening of the biceps and the result will be flexion instead of extension. This procedure demonstrates, according to Phelps' terminology, a "stretch reflex." A true spastic also may present flaccid muscles but this flaccidity is cerebral in origin. The third type of muscle found in spastics is the normal muscle. A muscle test, which will be discussed later under "treatment," is of vital importance to determine these various conditions.

The third group in this field are the ataxias. These cases are found rather infrequently in comparison to the other two groups. Their chief difficulty is inability to control the direction of motion due to a disturbance of the balance mechanism.

TECHNIC OF TREATMENT

The method of treatment used for each of the three types of cerebral palsy varies considerably. It is through this remarkable differentiation in treatment that the hope of future progress rests. Through the inexhaustable patience and tact of one man we are today able to discuss a long range plan of treatment that eventually will lead to partial or, in some instances, complete rehabilitation.

In a case of athetosis the underlying secret of success is to obtain relaxation. Through careful study it has been noted that the difficulty in these cases is not caused by any abnormality in individual muscles. The difficulty is with motion rather than with muscles. It is an involuntary movement on the part of the patient to make a motion in a certain direction. This discovery explains why operative procedure has been so unsuccessful in many instances in athetosis. It has been known that certain supposedly athetoid muscles have been completely severed and postoperative results have shown that the previous motion still persists with the remaining muscles.

To obtain relaxation a modified system of Jacobson's Progressive Relaxation is used by Phelps. It is surprising how few people know how to relax even one group of muscles. It is of utmost importance to teach the individual under treatment the feeling of relaxation. This is best done by starting treatment on a normal or nearly normal muscle or group of muscles. The patient should be placed in a comfortable position on a bed or table and pillows under the knees and arms may be used to enhance relaxation. Place your patient in various positions, side-lying, prone, supine or a midposition and when the least motion is apparent in one of these positions start training in relaxation from that point.

Many and varied tricks can be used to help the individual get the "feel of looseness," but great care must be taken not to compare the state of relaxation wanted with some vague or unknown experience. "Soft like a pussy" may be all right for a child who has played for hours with a pussy but for an individual severely handicapped by athetoid motions it may be something outside of his range of experience. The best method in most instances is to have the child under treatment experience the "feeling of looseness" in his own muscle. This may be produced in several ways. One method which has been used successfully is to lift the arm of the athetoid patient a few inches from a supporting pillow and then drop it. Explain to the patient that he is not to attempt holding the arm—just to let it fall as it will. It may be necessary to do this several times before even the slightest degree of looseness can be observed. As soon as the therapist notices relaxation she should give her patient credit for his cooperation. The term "credit" is used rather than "praise" because the latter is so grossly exaggerated by so many people. Very often this abnormal praise for a normal act produces ill effects. A good rule to remember is this—always expect the best of your patient, recognize accomplishment of a given task with mild approval but always in your attitude show that you expect a little better work.

When the patient's relaxation is obtained in either the prone or supine position the physical therapist may start motion from the relaxed position. This is done passively at first and with smaller children the use of singing rhymes is very helpful in establishing rhythm. Control of the proximal joints should be accomplished before finer motions are attempted. All parts of the body, except the extremities under treatment, should be in a state of relaxation. A detailed description of the entire course of treatment would compose a book but if the therapist understands the underlying principle of treatment she can apply it with success in athetoid patients. No hard and fast rule can be made concerning a strict order of routine exercises for these individuals. Personality, psychological reactions, and physical disabilities must be taken into consideration and the basis for progression established for each individual. No matter how varied the method of procedure the underlying principles must be the same if success is to be obtained.

The speech difficulties of the athetoid child must be treated by the same method or improvement will not be apparent. Grimaces, contortions, and involuntary motions can be eliminated if relaxation and motion from the relaxed position is the basis of every treatment.

The second type of cerebral palsy under discussion is the spastic. The physical disabilities of a spastic are entirely different from those of an athetoid. To insure progress the treatment must be adapted to the abnormal muscular findings. In the early part of this paper it was stated that cerebral palsies presented a complex picture. In this particular group this complexity can be readily understood. It has been mentioned that three types of muscular conditions may be present in a spastic individual. It is now a known fact that there can be flaccid muscles as well as spastic and normal muscles in an individual handicapped by spastic paralysis. A differentiation must be made in regard to these muscles, otherwise treatment will be of little value; therefore, a muscle test is essential before a treatment plan can be evolved.

A case may present severe spasticity in the gastrocnemius—this would cause "toe-walking." The picture looks hopeless and very often surgery is attempted in the form of tendo achilles lengthening. Consider the postoperative effects. If the tibialis anticus was flaccid it would be of no assistance to aid in dorsiflexion and keep the gastrocnemius stretched. The remaining fibers of the gastrocnemius would be spastic and, with no opposition from the antagonists, shortening may occur again. The same is true of any pair of muscles. It is always very wise when dealing with spastic paralysis to think of muscles in pairs. Before training or before operative procedure always test the antagonists of a spastic muscle. Phelps has demonstrated the disastrous results of operative procedure in cases of spastic adductors versus absent gluteus medius. He states that the reason for success in some instances is due to the fact that the gluteus medius happened to have voluntary muscle power.

Spasticity in one group of muscles with flaccidity or weakness in the antagonists will produce contractions. Watch for these and eliminate them by carefully planned reeducational methods. Massage is indicated in very weak muscles that have been overstretched by spastic antagonists. Very slow and fairly deep massage of the isolated weak group will increase nourishment and tone thus enabling the muscle to counteract, to some degree, the tremendous pull of the spastic antagonist. By very careful manipulation a spastic muscle can be stretched without incurring a "stretch reflex." This manipulation may take weeks and months before a desired result is obtained. Any attempt to rush the treatment will end not only in defeat but may have a two-fold

detrimental effect. First the spastic muscle has been, in most cases, subject to marked contractions over a period of years. The muscle has lost tone and elasticity. Any sudden stretching may tear some of the fibers and cause great discomfort as well as damage. Second, any sudden stretching of a spastic muscle will produce a "stretch reflex." Each time this occurs it strengthens that muscle and weakens its antagonist.

Speech difficulties in cases of spastic paralysis must be treated with the same principles kept in mind. Muscles controlling the speech mechanism may be spastic, flaccid or normal. The various combinations of these conditions seem overwhelming but careful observation will reveal that the abnormality is more or less constant. This should be a guide to the therapist in determining which muscles are spastic, flaccid, or normal and treatment plans can be made accordingly.

The third group to be considered is the ataxia group. Although these cases appear rather infrequently they present a very definite problem and often confuse those with whom they come in contact. Here the main problem is retraining in balance. An individual handicapped by this condition does not know when he is off balance until he falls. The foot, for instance, may be everted or inverted and he will not know in which direction it points unless he sees his foot. The results of long careful training are gratifying in these cases. An excellent program for these children is balance training in the kneeling, sitting and standing positions. A mirror is of great help for them to get a picture of how they look when they are balanced. This in turn is impressed upon them by the therapist and they are told to try to get the feeling of balance in that particular position. As balance improves, the patient should be told to close his eyes for a few seconds and retain the balance. Gradually the time can be lengthened and when correct balance can be maintained for several counts his work can progress to the next position. Gradually this feel of balance can be "trained in." Head balance often is very difficult to learn. An Alexander ball—a sponge rubber ball with one flat surface—placed on the head while the patient is in a sitting position, will show him quickly if his head is balanced on his neck. As this control improves he can be advanced to the standing position. Foot placements from a standing position also are beneficial. The gait of this patient may be very slow at first but by encouragement and training it can be speeded up to a very satisfactory gait.

Speech difficulties in these cases is caused by the inability of the patient to sense where his tongue is placed in his mouth. The use of a mirror in speech work is the first step toward correction of this difficulty.

In discussing the treatment of these three groups it is essential to take into consideration the personality characteristics common to each group. Various physical conditions found in each group have been mentioned but this alone does not always constitute a proper diagnosis. In many cases it is necessary for the orthopedist, neurologist and psychiatrist to discuss their individual findings before a correct diagnosis can be determined.

Although diagnosis is entirely out of our field, it may be of considerable help to the physician in charge to know some of the child's reactions in a given situation. In most instances we, as physical therapists, are in very close contact with the child. Dealing with the patient as an individual over long periods of time we often get some interesting sidelights that can be of diagnostic value. In considering the emotions of fear, rage and love each of the three groups described present a different picture.

The spastic individual is usually very apprehensive and fearful. This can readily be understood if one realizes that due to "stretch reflexes" in various muscle groups the spastic becomes rigid as he starts to fall and he cannot break his fall. Usually he goes down hard and through bitter experience he knows he will be hurt if support is taken away. It is most important to insure absolute security to the spastic individual at all times.

Diametrically opposed is the athetoid child who is in motion constantly. He has, perhaps, lack of confidence in himself but in most instances he has no real fear. From early childhood he has had involuntary motions and he has never known when or how he would fall over. Early experiences of falling proved harmless enough because in the early stages there was no tension and the fall was not blocked.

The emotion of rage brings out an interesting comparison due directly to the physical disabilities in each case. The spastic is not affected very much by rage. The child has been blocked by "stretch reflexes" all of his life and has finally given up the struggle after repeated unsuccessful attempts at a given act. He becomes stoical. The physical therapist's chief function here is to stimulate him to activity and set goals where success is possible, this reestablishing the stimulus to try to accomplish things for himself.

The athetoid, on the other hand, is greatly affected by rage. His physical difficulties have allowed him, occasionally, to experience success in an attempted motion. He remembers that he accomplished an act once and when he tries to repeat the act his involuntary motions steer him in the wrong direction. Repeated efforts may prove futile and very often in a split second he has a temper tantrum. If the underlying cause is understood this situation can either be avoided or handled intelligently. He is not a behavior problem in the true sense of the term—he is struggling against terrific odds. Pampering a child in such a state would only increase the frequency of temper tantrums. Put him on his bed quietly and leave him alone until he is calm again. Usually an athetoid is much chagrined at his actions and asks to be forgiven. Here then is the time to explain to him that controlling these outbursts is part of his training program. The best possible method is to avoid situations where he will have to exert almost superhuman effort to execute a given act.

The emotion of love has a direct relation to the motor disability of the individual. A spastic child does not show a great capacity for love. As a baby his muscles were apt to have "stretch reflexes" and the more he was handled and fondled the more unpleasant the experience of muscle contraction. The type of love that most spastic children prefer is a quiet protective type. Give him security and that is all he desires. Spastics do not make friends easily as a rule.

The athetoid child shows great capacity for love. Much of this is to overcome or to make up for his handicap. Most of these cases are very affectionate—they make friends easily and are usually well liked. They enter into all kinds of activity and are very happy.

The ataxias are quite normal in all their reactions to the emotions.

To obtain the desired results in the treatment of cerebral palsy patients it is essential to keep in mind the underlying principles of procedure and the psychological reasons for certain behavior patterns that are characteristic of each particular group. This involves time and sympathetic understanding plus firmness of purpose. The expense involved in carrying out the ideal program for cerebral palsy patients is prohibitive in most instances and it is up to the therapist and physician to use ingenious methods to accomplish the desired results in his own particular set-up.

TIME ELEMENT AND EXPENSE

One of the greatest factors in delaying progress with cerebral palsy patients has been due to lack of time and funds to carry out the necessary therapeutic and educational procedures for the rehabilitation of these unfortunate people. Progress has been shown even with the severely handicapped children at the Children's Rehabilitation Institute—Doctor Phelps' private school for cerebral palsy patients. One of the problems confronting physicians, educators and therapists is that of convincing those in authority that rehabilitation does net returns for the expense involved.

Earlier in this paper the results of surveys showed that seven cerebral palsy cases were born each year per 100,000 population. Of that number it has been shown that not more than two of these children would be likely to be truly mentally deficient. It was stated also that perhaps not more than one of the seven would die before attaining adult life. The total number of cerebral palsy cases under 16 in a city of 100,000 was 96. Some of these would be mild cases—others very severe. It has been stated by Phelps that fully 55 per cent or 54 out of the 96 would compose a thoroughly treatable group. Multiplying this by the population it has been stated that in a city of a million people there would be easily 540 treatable children. (Mild, severe or mentally deficient cases are not included in this group.)

This is a huge task. It can be solved in many different ways. Educators, physicians and therapists are struggling for a solution. To gain full support from city and state authorities it is essential to show results. Care must be taken in the selection of cases to be treated, otherwise valuable time and energy will be expended to no avail and city and state authorities will be justified in their criticism of unnecessary expenditure of funds. Optimism and faith in the future rehabilitation of these unfortunate cases is the first requisite toward success.

In most situations the child is in a more or less ideal set-up for only a few hours a day. To meet the great need for carry-over into the child's home life it is essential to have the cooperation of the parents. Most parents are anxious to help their child toward a more normal life and through contact with them the therapist's task can be simplified. At all times she must remember that a mother or father has an emotional tie-up with the child. With patience and care a parent can gradually be educated to the physical and psychological needs of his particular child. To rush this educational procedure or to lose patience with a parent would defeat the goal. As a child shows progress the parent will be searching for

a truly ideal set-up that will give his child a chance for a more normal life. When this occurs then city and state authorities will be bombarded with requests for thoroughly trained educators and therapists in the field of cerebral palsy. Every small point gained now will be of untold value to the future rehabilitation program for cerebral palsy patients. We, of this generation, may not live to see the ideal goal we have in mind but neither did the pioneers in the medical, educational or nursing fields. It is because of the untiring efforts, the optimism and courage of the pioneers in those fields that we today can be proud of our high medical and educational standards. Can we afford to be less courageous?

SUMMARY

The plan for rehabilitation of the cerebral palsy group has changed from a dream to a reality. Through endless research the former statements concerning diagnosis and prognosis of these cases have been contradicted scientifically. Results of surveys made of cerebral palsy cases in the United States shows that in a city of a million people there would be easily 540 treatable children. Differentiation between the athetoid, spastic and ataxic has simplified diagnostic procedure. Definite underlying principles of treatment technics for each group have been established. A new ray of hope, based on actual progress of cases studied and treated by these methods, has stirred widespread interest among the professional and lay groups concerned with cerebral palsy patients.

Due to lack of time and funds to carry out the necessary physical and reeducational procedures for the rehabilitation of cerebral palsy patients progress in this field has been delayed. Restoring these patients to a more normal life is a huge task. Care must be taken in the selection of cases to be treated otherwise valuable time and energy will be expended to no avail. A spirit of optimism and courage must be maintained by physicians, physical therapists and educators in order to reach the ideal goal of rehabilitation for cerebral palsy patients.

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Let's Immobilize False Impressions

Henry O. Kendall and Florence P. Kendall

In the January-February 1942 issue of THE PHYSIOTHERAPY REVIEW, there appeared an article by K. G. Hansson, M. D., on the "Present Status of Physical Therapy in Anterior Poliomyelitis."

Such attempts to analyze and evaluate present day modes of treatment for after-care stimulate thought and promote further study to establish facts and rule out false impressions which so often obscure the facts.

Careful studies of large series of cases will be necessary for determining facts in regard to poliomyelitistherapy. Identically controlled cases in epidemics of identical virulence have not been compared scientifically, as no firm believer in a method that has proved beneficial in his hands would willingly withhold the same from any unfortunate victim. Animal experimentation has certain drawbacks which make it imperative that the finally accepted management must evolve through "nearly parallel" controls. Utmost caution should be exercised when allegedly similar methods are employed, to insure that such methods are as nearly exact as scientifically possible.

Medical history is replete with "comparisons," in which the comparer wittingly or unwittingly has omitted details when the "details" chance to be the determining factor. The authors believe such to be the case in the paper of McCarroll and Crego[1] reporting on cases observed at St. Louis Shriners Hospital for Crippled Children, and upon which was based Dr. Hansson's analysis of one form of treatment. Through an unfortunate misunderstanding the co-workers carried out physical therapy under the impression that they were applying what some have designated as the "Kendall[2] plan." To anyone intimately familiar with the poliomyelitistherapy

Children's Hospital School, Baltimore, Md.

as done at Children's Hospital School it is difficult except by a process of elimination to determine which of the several studies[3] was supposed to resemble the treatment with which it is compared.

The so-called "rest and protection" treatment employed at Children's Hospital School is not solid plaster immobilization without physical therapy, nor is it solid plaster immobilization followed by physical therapy. The protection depends on the degree of strength in muscles and varies from wire splints or posterior plaster shell splints, to no "protection" except bed rest protection until weight bearing is to be permitted.

Solid plaster has been used in uncomplicated cases only as a last resort for infants who could not be protected in a proper position by partial splints.

The protection, except in these rare instances of temporary solid plaster casts among infants, is removable for treatment, and treatment *accompanies* the rest and protection—it does not follow after periods of immobilization.

Joints are not permitted to become stiff. A range of joint motion of 30 to 40 degrees is always maintained. Range of motion beyond that degree is purposely restricted in accordance with the strength of muscles surrounding the joint, with an added consideration in regard to the time element. In other words, for muscles below 50 per cent of power, the movement of the joint is guarded to prevent stretch of the weak muscles. However, if muscles remain unchanged in strength for a period of approximately three months, then range of motion is gradually increased with the aim to restore as nearly normal joint range as is advisable in consideration of the degree of paralysis.

Treatment cannot be outlined as a technic. Treatment is "tailor-made" for each individual and employs the physical therapy measures necessary to obtain the best possible results for each individual.

In the early convalescent stage, exercises are localized, so far as it is possible and practical, to individual muscles or functionally independent parts of a muscle.

Many muscles can be isolated quite accurately by carefully controlled movements. Some muscles, because of their close and nearly parallel association with other muscles, cannot be accurately isolated, but the controlled movement then isolates a muscle plus parts of other muscles which act in the same direction of pull. Some muscles are fan-shaped. In such muscles there exist functionally independent parts and frequently these parts can be isolated satisfactorily in exercise.

Since paralysis often affects individual muscles or parts of a muscle, it is advisable in so far as possible to localize exercise to the affected muscle or part of a muscle.

Each individual in the department who treats poliomyelitis patients is capable of doing a detailed muscle test, and thereby is able to regulate daily dosage of treatment in accordance with the changes that occur in muscle power. The recorded examinations are generally performed by one individual, because it has appeared advisable in view of compiling records for statistical research.

With the conviction that the methods of treatment for poliomyelitis can be continually improved and the desire to be scientific in the analysis of treatment, we continue the tedious work of maintaining detailed records. With accurate records, comparative studies will scientifically compare treatments according to their details and not according to their given names.

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2. U. S. Public Health Bulletin No. 242, April 1938.

3. McCarroll, H. R., and Crego, C. H., Jr.: An Evaluation of Physiotherapy in the Early Treatment of Anterior Poliomyelitis. J. Bone and J. Surg., XXIII:4, October 1941, studies as summarized by Tables I through VI:

Table I: Summary of Thirty Extremities Treated by Short Periods of Immobilization of One to Four Months without Physiotherapy

Table II: Summary of Ten Extremities Treated by Short Periods of Immobilization of One to Three Months in Solid Plaster Followed by Physiotherapy for Three to Six Months

Table III: Summary of Seventy-Five Extremities Treated with Prolonged Plaster Immobilization of Four to Eighteen Months without Physiotherapy

Table IV: Summary of Sixty-two Extremities treated with Prolonged Plaster Immobilization of Three to Twelve Months and Longer, Followed by Physiotherapy for Eight to Twenty-Four Months

Table V: Summary of Nineteen Extremities with Delayed Plaster Immobilization of Six to Eighteen Months in an Attempt to Improve Power (After Fourteen Months and Longer)

Table VI: Summary of 129 Extremities in which No Treatment Was Used

Spastic Speech Disorders and Their Treatment

Katherine Pittenger

Although a recognition of the existence of defective speech is recorded on cuneiform tablets dating back probably as far as 3000 years B. C. and bearing prayers for deliverance from a "thick and faltering tongue,"[1] it is only in fairly recent years that the field of speech correction has come into being as a vital weapon for battling the debilitating and discouraging effects of a handicapping influence such as defective speech on the lives of a goodly proportion of the population of this country. Defective speech is by far the most common handicap suffered by children in the school age population in the United States today, and it is not possible to estimate how large a percentage of over-school age population it affects. Out of a student population of 50,000,000 approximately 4,000,000 have speech defects, 300,000 are crippled, 80,000 are deaf and 60,000 are blind, according to Goldstein.[2] The disorder labeled "stuttering" has attracted more publicity and research attention than any other one speech disorder probably because of its prevalence and because its symptoms and effects are more dramatic than those exhibited by most other disorders. In the past few years, however, there has been a rapid development of interest in the speech problems of the physically handicapped child. As physical therapists and occupational therapists you undoubtedly are concerned with all the problems of crippled children and are fully aware of these speech problems. Because of your specialized interest in such children, this article will be limited to a discussion of speech disorders accompanying and resulting from spastic paralysis and the treatment of these disorders.

Not all patients with spastic paralysis have defective speech although it has been estimated that between 65 and 75 per cent do exhibit some speech difference. Further, the presence or absence of defective speech is not necessarily associated with the degree of spasticity present. For example, an individual may have rather mild spasticity in that it affects only one extremity but also affects the musculature of speech, either respiratory, phonatory or articulatory, and so produces a speech disorder of varying degrees of severity; whereas another person may have severe spasticity affecting all extremities but not affecting the speech muscles with the consequence that there is no speech disturbance. The above occasionally is true, but the more usual occurrence is to find a speech disorder accompanying the more intense and widespread spasticity, and very mild speech disorder or none at all with the limited, milder spasticity.

A brief review of the pathology which produces this condition might serve to explain the presence of spastic speech in some patients and its absence in others, as well as to define specifically the exact nature and, so far as is possible, the cause of spastic paralysis. True spasticity of children, that is, rigidity and hypertonicity of muscles, is a result of a lesion in the pyramidal pathways or motor area in the opposite cerebral hemisphere. There is divergence of opinion as to the etiology of this condition. Some authorities believe it is due to intracranial hemorrhage from birth injury, while others believe numerous other factors may cause it: such as lack of development of the pyramidal tract, congenital syphilis, intra-uterine factors and factors following birth (embolism, thrombosis, meningitis, etc.) Such a lesion affecting the motor fibers of the pyramidal tract usually involves the speech fiber tracts and produces hypertonicity and weakness of the breathing, phonating or articulating muscles and thus produces spastic speech in conjunction with the spasticity present elsewhere in the body. When the lesion does not involve the fibers activating the speech mechanism, the patient does not exhibit a spastic speech defect along with his spastic condition. However, a spastic child whose speech muscles are unaffected may exhibit a speech defect not related to his paralysis. Consequently a description of

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the nature of a spastic speech defect directly attendant on the patient's physical disability is in order so that such defect may be differentiated from others and appropriate therapy measures instituted. Generally speaking, spastic speech is described as slow, dragging, labored, drawn-out speech with indistinct articulation and considerable slurring of sounds. Often facial contortions and other evidences of great effort in speaking accompany spastic speech. Sudden changes of pitch frequently occur, especially in males. Sometimes the speech is very loud and in other cases it is very soft, almost whispered, showing a further characteristic, that of a lack of volume control of the voice. Hawk,[3] past-president of the American Speech Correction Association, has stated that: "In spasticity there is diffuse discharge of energy to various related muscles whenever the child attempts to speak. He may easily become exhausted in an effort to speak a very few words. His speech usually shows choppy, unrhythmic, labored utterance and meaningless activity of muscles not ordinarily used in talking." Sometimes the involvement of speech musculature is so extensive that there is no speech at all.

Because of this characteristic type of speech or lack of speech together with the body spasticity, these patients frequently are diagnosed as feeble-minded. When graded in strict accordance with requirements of standardized mental tests, according to mental age and intelligence quotient results, these patients would seem feeble-minded, because their motor and speech inabilities prohibit their answering of many test items, such as naming objects, manipulating blocks and beads, drawing, et cetera, which are required at various age levels for successful passing of the tests. It is apparent then that currently-used tests of mental ability, such as the Terman-Merrill Revision of the Stanford-Binet Intelligence Scale, the Merrill Palmer Pre-School tests and others, are not suited for measuring the intelligence as a total capacity of children handicapped either in speech or motor function. We lack any tests which adequately measure their capacities. Localized lesions like those producing spasticity often affect specialized functions, making for special disabilities, but do not usually show such widespread effect as to cause feeble-mindedness. Mental testing of spastics with present-day testing methods is then a matter of administering and evaluating only those tests which the child is physically capable of performing and analyzing his capacity only on the basis of those items. In this way we get insight into his educability along various lines. It is necessary to emphasize that motor disability and language disability serve to limit rather markedly a child's experience—a very significant factor in mental development. There is a big question mark concerning the intelligence level of many spastic patients growing out of the fact that there are records of drooling, semi-mute, destructive little human animals whose early behavior seemed apparently on the idiot level but who learned to speak understandably, control their muscles to a certain degree and behave in an intelligent fashion. Because of these things, Davison[4] quotes Phelps as saying, "All cases showing dyskinesia (impairment of the power of voluntary movement) as the result of birth injury should be treated unless or until it be proved their intelligence is so low that treatment can accomplish little." Only by following this precept with regard to such cases can we be sure that we are not burying an average or better than average intelligence in a feeble-minded institution. Pusitz,[5] who has made rather exhaustive studies in the field of spastic paralysis, estimates that 50 per cent of spastic patients display normal intelligence, 5 to 10 per cent are abnormally bright, 30 per cent are idiots or low morons, and 10 per cent are high moron or borderline. In the selection then of crippled children for speech training, speech correctionists try to take great care not to pass over patients who are capable of improvement in spite of many indications to the contrary.

Speech therapy is only a very small part of the training needed to aid a spastic and help him to a greater capacity for living. However, it is a very vital part of his training program, because speech is a major key to expression of one's self as a human personality. The ability to speak and make one's self understood without too great a deviation from normal speech gives a child a sense of his own worth and a feeling of accomplishment and mastery. Speech is necessary also to the growth and development of a child's intelligence. As Hawk[3] has very aptly stated: "Speech helps the child to a new world of sensory impressions and perceptions which stimulate intelligence to function in a normal way. Constancy of I.Q. holds fairly well for normal children, but it shows surprising advance in handicapped children after speech training, surgical treatment, medication, posture clinic, and other corrective measures. Speech training helps those retarded in mental ability."

The orthopedic surgeon, neurologist, pediatrician, physical therapist, occupational therapist and speech therapist all have contributions to make toward the total improvement of spastic patients. The Cerebral Palsy Clinic of the James Whitcomb Riley Hospital in Indianapolis, Indiana, includes a physical therapist, occupational therapist and speech therapist on its staff along with the orthopedist, psychologist and other special departments. The Charlanne School for Spastics in Birmingham, Alabama, has a similar staff as well as other special teachers all under the direction of a neurologist, pediatrician and speech pathologist. Doubtless there are other schools and clinics for spastics which are similarly staffed. It is the general concensus that the close cooperation of these various departments with a well-integrated program worked out together for each patient makes possible considerably greater progress than could be obtained with the various units functioning separately. Physical control as achieved by the physical therapist and occupational therapist is essential for progress in speech. It is so essential that rudimentary training in certain physical therapy procedures, such as instruction in technics for relaxation and exercises involving speech musculatures as well as grosser bodily movements, were included in the training program for speech correctionists at the University of Iowa to help them with speech training of spastics when physical therapy treatment was not available. Most workers with spastics have reported a definite correlation between improvement in muscular action and coordination and improvement in speech, as well as much faster and better speaking progress when speech training is accompanied by motor training. There doubtless are many activities which the speech teacher can utilize during the time set aside for speech training that will aid in the patient's motor development as well as numerous ones the other workers can employ to promote the acquisition of speech and proper speech habits.

It is the speech therapist's duty to determine the exact nature of the speech defect presented and to use all the methods and technics available to her to correct in so far as possible that which is wrong with the speech. Before outling various speech corrective procedures usually employed in such cases, a few general factors affecting the speech training might be considered here. First, as has been mentioned, results are much better when speech training proceeds along with physical therapy which is aimed at total relaxation, the development of muscular coordination and control for performing skilled acts, and the elimination of associated tensions. A second point to be kept in mind is that the progressive development of the lessons should be kept within the limits of the child's powers of assimilation or else frustration and worry will act to cause a deadlock in his advancement or even a setback, since spastic children are especially prone to be upset by tension. Third, both the speech teacher and child must face the reality that there are physical limitations to the improvement obtainable since the original motor pathways are destroyed and only residual functions may be utilized; so the goals toward which advancement is directed should be attainable.

In determining the nature of the speech defect, the speech correctionist endeavors to locate the speech mechanisms which are affected and observes the breathing, phonating and articulating systems to see if one or all three are involved in producing the disorder. The effect of spasticity on the breathing musculature is best seen by observation of the breathing and noting if it is smooth and rhythmical or jerky and difficult. Spasticity makes it difficult to control the out-going stream of air and thus causes a disturbed speech rhythm, shortness of breath during speech and fluctuations of intensity. Authorities say that if a child can produce a steady tone and maintain it for 10 seconds, it is assumed his breathing mechanism is all right for speech. If not, various breathing exercises must be undertaken, such as manual pressure on the abdomen used to force the diaphragm to take hold at the right time; some children have been put into artificial respirators to force breathing from the outside of the body and give the habit of breathing properly. Less extreme methods for teaching good speech breathing are: breathing 10 times deeply when lying in bed and blowing exercises using feathers, candles, whistles, horns and others which accomplish the purpose of proper speech breathing and also introduce sufficient variety to keep up the patient's interest.

Injury to the phonating mechanism is apparent in monotonous pitch, a fixed intensity of overloudness or oversoftness, and voice quality often is affected so that it is husky or nasal, or in some cases there is no voice. The blowing exercises have been found helpful in improving the strength of the voice. Pitch variation can be aided by teaching simple songs, and intensity is worked on by exercises using extremes of loudness. The soft palate, when spastic, produces

nasal speech. Yawning, chewing gum, repeating syllables containing the *g* sound all help here in approaching normal function of the spastic soft palate.

Spasticity of the articulating mechanisms—tongue, lips, jaw—produces phonetic distortions, additions, substitutions, omissions and the like. Special exercises for tongue and lips prepare for greater facility in forming sounds correctly. Tongue exercises of best use are sticking the tongue in and out of the mouth rapidly, rotating it around the outside of the mouth, wagging it from side to side, touching the tip of the tongue as far down on the chin as possible and as far up toward the nose as possible and others of like nature. In teaching small children, the exercises need to be "sugar-coated" to insure maintaining the child's interest in the work and to prevent boredom with it. Adults who can appreciate the meaning and purpose of so much drill often find it boring to carry out but persist despite some boredom realizing that a successful outcome depends upon much drill. The child on the other hand has little such appreciation of possible future returns—the activity of the moment is of most importance, and it must be an absorbing one to keep his attention. With tongue exercises sugar-coating may take the form of such little devices as playing kitten lapping up milk, licking suckers, licking jam off the lips and numerous other games which may be worked out. Lip exercises involving puckering and drawing up of the lips as well as spreading them are worked on when the lip muscles are spastic.

Special articulatory tests involving all the speech sounds in initial, medial and final positions are administered. A speech sound analysis is made, noting the specific sounds incorrectly produced which are then singled out for concentrated work. In teaching speech sounds, the so-called stimulus method is most widely and beneficially used. Here the teacher produces the given sound combination with another sound to form some nonsense syllable. For the sake of illustration, let us say that the sound *f* is being studied; the therapist combines it with a vowel and says the combination, in this case *fe*, five times. The patient then attempts to produce *f* in that combination correctly. He repeats the syllable only once in response to the teacher's five times on the assumption that if he produces it incorrectly, repetition would be harmful and would serve to establish more firmly the wrong habit. Hearing the sound correctly many times is considered highly desirable since it aids the patient in recognizing the correct sound as opposed to the incorrect sound and in this way he learns to evaluate his own production of the sound and know when he has achieved it properly. This method is followed until the sound can be produced correctly following a vowel and between vowels. Then words are substituted for the nonsense syllables drilled upon, then words in sentences, and the final test of mastery is correct production of the given sound in conversation. At this point it is again wise to remember that perfection should not be striven for where it is unattainable.

Teaching the proper placement of tongue, lips, teeth and jaw for producing a given speech sound is another method of teaching speech. In most cases it serves to reinforce the stimulus method and seldom is it used alone to teach speech, at least to hearing patients. Here the patient observes the exact placement of the articulating structures for making a given sound by watching the teacher's mouth and position of structures used and by studying diagrams. He then attempts to imitate what he sees, verifying his own efforts by observing them in a mirror. Speech is so much a matter of simultaneous function of several structures that artificial attempts to place these structures separately in given positions are not very successful. Further, since we use nearly all sounds in combination with other sounds, these other sounds distort and change somewhat the true position for a given consonant so that position of the articulating organs varies for different combinations. This indicates that the stimulus method is on the whole the most natural method for teaching speech. Besides correct sound production, the speech clinician also attempts to eliminate, when necessary, overflow motor activity in the face. Performance before a mirror with conscious attempts to relax the face and maintain an effortless expression while speaking is the usual method of handling this phase of the problem.

It is just as important for an individual to adjust well to his environment and to the people about him as it is for him to talk properly or control his movements well. A handicapped person often finds his adjustment to life situations extremely difficult. This is not surprising when one considers how difficult it is for the nonhandicapped individual to maintain a constant harmonious adjustment to his environment, so that in the case of the handicapped person, it is easy to see that there are considerable obstacles

in the way of satisfactory adjustment. Therefore work in mental hygiene and principles of adjustment is also part of a speech correctionist's training in order that a patient's attitude toward his speech problem may be influenced to be a healthy one and that he may be helped to accept his handicap and proceed to accomplishments in spite of it rather than give up the struggle for good adjustment and submit to using his handicap as an excuse for failure.

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William Gilbert, The Father of Electrotherapy

Frank Hammond Krusen, M. D.

The famed physician, William Gilbert, whose painstaking researches have meant so much in the development of electrotherapy, was born in Colchester, Essex County, England, in the year 1540.

Gilbert came from a good family, with a high reputation in their own community. They were, apparently, of settled ways and did not travel far from their ancestral home. Nothing of unusual character can be found concerning Gilbert's early life and education, which was seemingly tranquil and uneventful.

In 1573 he settled in practice in London. He was well known outside his profession for he attended many celebrated people and was physician to Queen Elizabeth. Gilbert spent many hours during his years in London in the painstaking researches which were to bring him undying fame. After eighteen years of labor, he finally published his great book "De Magnete." For twenty years, he experimented and speculated on magnetism and frictional electricity.

Let us see if we can reconstruct a picture of him at this time. We can probably see him at the work he loved best. A man "of stature tall and of cheerful countenance," with close-cropped beard and mustache, with determined mouth and alert eye, well dressed, for he was "a man of means," in the fashion of his time, with large, flowing sleeves, full breeches, brocaded waistcoat and the large, ungainly ruff of the Elizabethan era about his neck. In order to work in comfort, let us hope that he has laid aside some of his cumbersome attire. He is now in his work room, surrounded by globes, magnets of all sizes and shapes, diverse minerals, precious gems; pieces of amber, wax and jet are lying on a table before him. Various instruments and books surround him as he bends over his work. He is comparing the attraction power of loadstone and rubbed amber. He carefully weighs both loadstones and pieces of amber. Next he weighs tiny bits of straw and larger pieces of steel. He then makes his experiments. Finally, he carefully records his results, which are about to appear in his famed opus.

The Dictionary of National Biography records that "It was the first great physical book published in England." His general conclusion is that the phenomena of magnetism are explained by regarding the earth as one vast spherical magnet.

His book is devoted chiefly to magnetism, but in Chapter II he describes a large number of phenomena somewhat resembling those which are magnetic. He showed that by the friction of glass, wax, sulphur, and many other substances besides amber an attractive power could be produced. To this power he gave the name "electricity" (electricitas) from the Greek name for amber. To Gilbert, therefore, we owe the word "electricity." In this marvelous book he laid the foundation of terrestrial magnetism and electrical science.

While the greater portion of "De Magnete" is devoted to magnetism, nevertheless, a very important section deals at length with electricity. —*From Archives of Physical Therapy, December* 1931.

Gravitational Influences on Postural Alignment

F. A. Hellebrandt, Kathryn S. Riddle, Eleanor M. Larsen
and E. Corinne Fries

The importance of gravitational stresses to disturbances in stance mechanics has been amply recognized in the literature on posture. Gravity is an ever present force which tends to collapse the weight-bearing limbs, increase the anteroposterior curvatures of the spine and derange the poise of the head and chest. It is probably the major modifier of the posture of man. Although this is well known there has been no consistent effort to study stance characteristics and postural variability in the light of the stresses to which they might reasonably be attributed. The problems involved are very complex and "animal mechanics" is a subject which has virtually disappeared from twentieth century medical science. Modern interest has been sporadic and scattered among a small group of workers, notably Bernstein, Basler, Cotton, Fenn, Elftman, Steindler and Reynolds. In its practical aspects, the Wellesley and Springfield College groups have been especially active. However, Hooton[1] ventures the opinion that an adequate comprehension of body mechanics has not yet been achieved.

Methods whereby simultaneous biplane posture photography can be synchronized with biplane center of gravity observations have been devised in this laboratory.[2] Using these, the object of this study was to determine what bearing, if any, the anteroposterior eccentricity of the body's center of weight has upon the anteroposterior posture.

Methods

The procedures used were those described in detail in the previous papers of this series.[2] The subjects of the investigation were seven normal adult women of exceptionally good neuromuscular development as judged from their physical activity histories. Each stood for 5 minutes in a comfortably erect stance and for an equal time in the best posture attainable by strong voluntary effort. Synchronized center of gravity observations and posture photographs were taken at 5 second intervals. The Wellesley test was selected as the criterion by which to evaluate the posture, and the technic of MacEwan and Howe was rigidly followed.[3] The experiment yielded 854 profile view photographs, all of which were graded by one of us (K.S.R.).

There were 1,708 instantaneous observations of scale load, 122 per subject in each of the cardinal vertical orientation planes. These were obtained as kymographic points which could be converted into scale load deviations from the known base line value by the application of the appropriate constants derived from the slopes of the calibration curves of the center of gravity apparatus. The partial weight of the subject at the instant each photograph was taken could thus be determined accurately and readily. By equating moments the center of gravity was then located in reference to known points on the apparatus. These values were translated subsequently into diameters which could be introduced into the footprint. The point of intersection of each synchronously obtained coronal and saggital plane measure marked the experimentally determined vertical projection of the center of gravity at an instant of time when the alignment of the body was being simultaneously photographed.

To reduce the data to equiparant units, each observed center of weight was related to the geometric center of the subject's supporting base. By converting the absolute deviations into relative values, the observations on all subjects were rendered comparable irrespective of variations in the anteroposterior diameter of the base of support. The sagittal eccentricity of the vertical projection of the center of weight was taken as a numerical measure of the resultant of all the gravitational stresses acting on the body in that orientation plane. When the observed center of weight falls behind the geometric center of the base the value is negative; when it falls in front,

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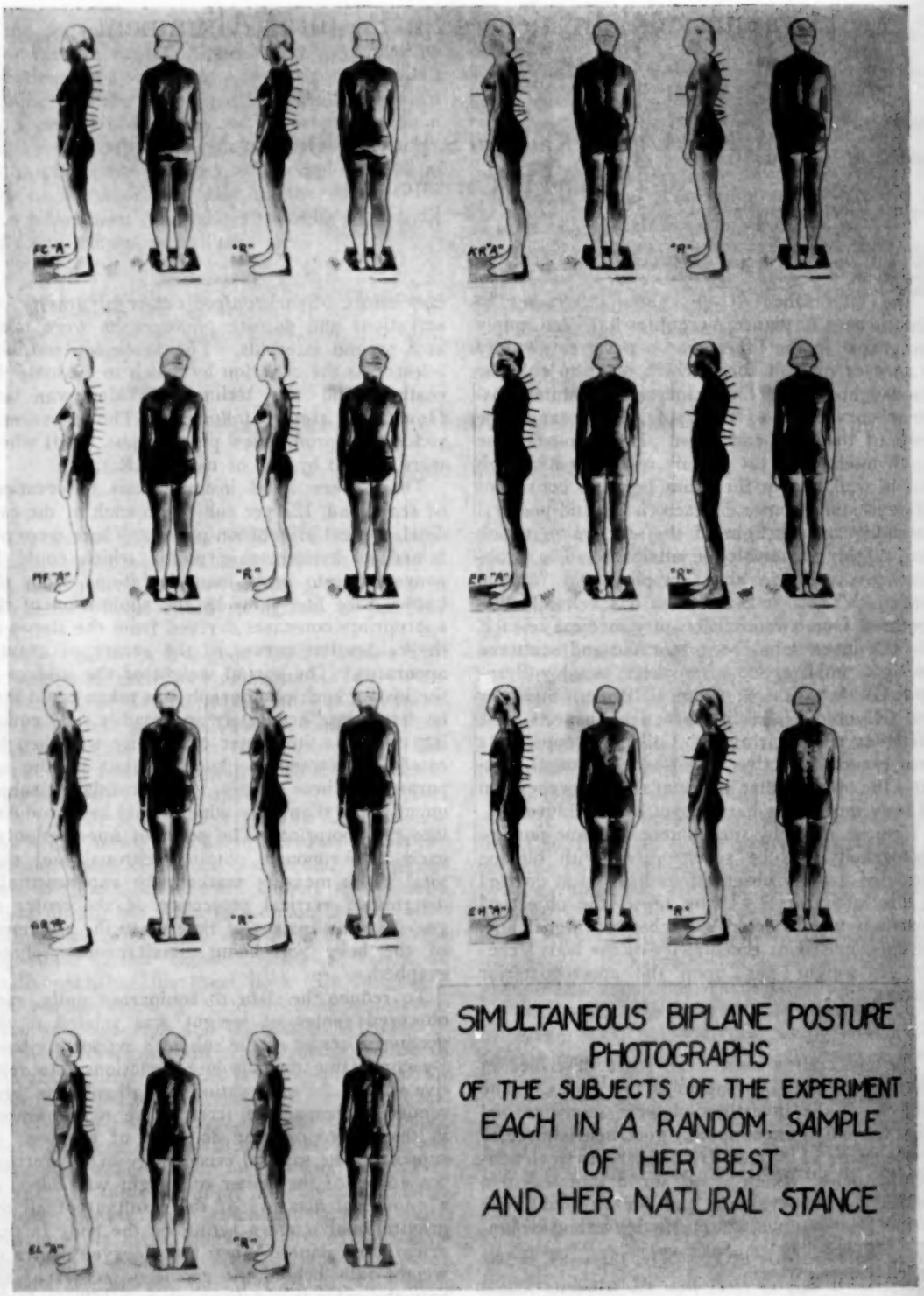

Fig. 1. Paired photographs indicating the anatomical build of the subjects, their relative size, weight

distribution, and characteristic "A" posture and relaxed standing positions ("R"). The height and weight of each subject follows: F.C. 158.1 cm., 56.6 kg.; M.F. 162.3 cm., 53.0 kg.; G.R. 170.7 cm., 54.5 kg.; E.L. 158.0 cm., 43.4 kg.; K.R. 163.7 cm., 53.7 kg.; E.F. 168.5 cm., 50.4 kg.; E.H. 160.5 cm., 52.7 kg.

the value is positive. The two variables, gravitational stress and posture score, were correlated using the Pearson product moment method.

RESULTS AND THEIR INTERPRETATION

The main evidence is contained in the illustrations. Figure 1 is a random sample of simul-

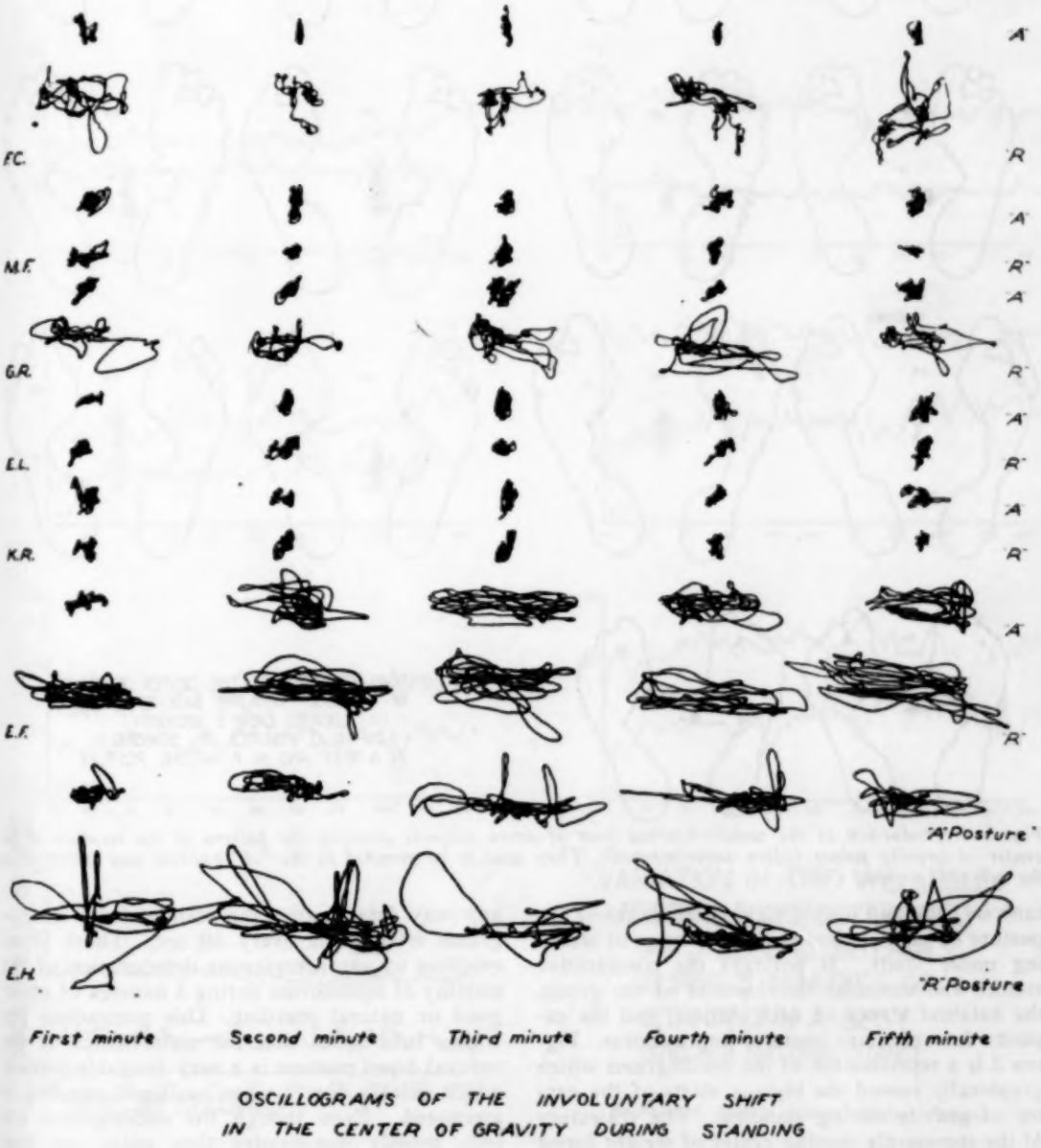

Fig. 2. Reproduction of the rhythmic movement of the center of gravity in the anteroposterior and transverse vertical planes (reading from right to left and top to bottom) illustrating the relative constancy of sway patterns in the "A" and relaxed ("R") posture.

VERTICAL PROJECTION OF THE CENTER OF GRAVITY
OF THE BODY INTO THE BASE OF SUPPORT
LOCATED EVERY 5 SECONDS
DURING 3 MINUTES OF STANDING
IN A BEST AND IN A NATURAL POSTURE

Fig. 3. Reproduction of the weight-bearing base of seven subjects showing the pattern of the location of 61 center of gravity points (often superimposed). They tend to be grouped in the "A" position and scattered in the relaxed posture ("R").

taneous back and profile view photographs of the posture of each subject in the two types of standing under study. It portrays the comparative stature and muscular development of the group, the habitual stance of each subject, and the capacity for voluntary postural improvement. Figure 2 is a reproduction of the oscillograms which graphically record the biplane shifts of the center of gravity during standing. The trajectory of the incessantly moving center of weight forms a continuous line, swinging back and forward and from side to side with a more or less characteristic rhythm for each subject. Without in any way interrupting the stance, fresh oscillograms were made every 60 sec. There is no evidence of any conspicuous deterioration of the stability of equilibrium during 5 minutes of either good or natural standing. This contradicts the widely held belief that the maintenance of the vertical biped posture is a very fatigable process which quickly decays when sustained standing is attempted. Even though the oscillograms are only grossly quantitative they point out that relaxation is something which must be cultivated. The so-called relaxed and comfortable standing of several of our subjects was no less stable than

the most steady posture attainable by voluntary effort. Cortical interference, presumably related to previous posture education, is one of the most distorting of the variables invalidating the physiological study of the stance mechanisms effective in man.

Figure 3 illustrates the scatter of the biplane instantaneous center of gravity observations as projected into the base of support. Sixty-one such determinations were made at uniform intervals of time during each 5 minutes of standing. In the most stable subjects many of the points are superimposed. This figure illustrates graphically that the stress pattern for any given person is a highly individual matter calling into action an ever changing galaxy of motor units

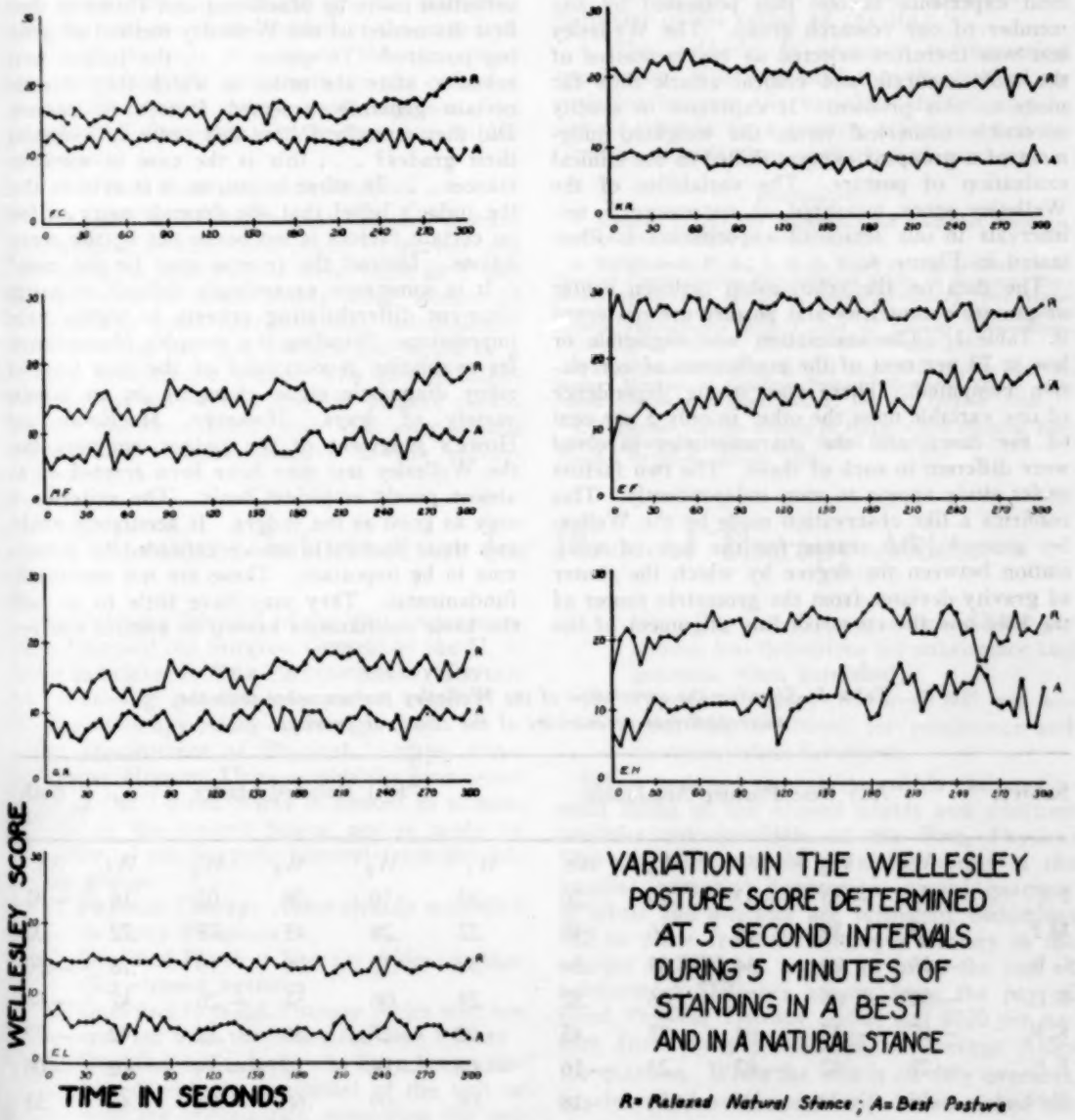
WELLESLEY SCORE
TIME IN SECONDS
VARIATION IN THE WELLESLEY POSTURE SCORE DETERMINED AT 5 SECOND INTERVALS DURING 5 MINUTES OF STANDING IN A BEST AND IN A NATURAL STANCE
R= Relaxed Natural Stance ; A= Best Posture

Fig. 4. Graphs showing the variability of the Wellesley posture score as applied to two series of 61 consecutive posture photographs. The stance of the subjects in the group ranged from excellent to very poor. The variability was great irrespective of the score. The coefficient of variability tended to be significantly smaller in the relaxed posture even though the shift in the center of gravity was greater.

by way of stretch reflexes primarily involving the antigravity muscles. It was these data which made us suspect that such gross shifts in the center of gravity of the body as a whole might be reflected in readily diagnosed variations in the alignment of the multisegmented body.

The establishment of a valid and reliable objective criterion for the evaluation of posture is a technical task necessitating judgment and practical experience beyond that possessed by any member of our research group. The Wellesley test was therefore selected as representative of the most accurate and critical attack thus far made on this problem. It expresses in readily accessible numerical terms the weighted judgment of a group of experts skilled in the clinical exaluation of posture. The variability of the Wellesley score measured at successive 5 sec. intervals in our series of experiments is illustrated in Figure 4.

The data on the relationship between center of gravity eccentricity and posture are presented in Table 1. The association was negligible or low in 73 per cent of the coefficients of correlation computed. There was strong dependence of one variable upon the other in only 5 per cent of the cases, and the characteristics involved were different in each of these. The two factors under study appear to vary independently. This confirms a like observation made by the Wellesley group.[4] The reason for the lack of association between the degree by which the center of gravity deviates from the geometric center of the base and the corresponding alignment of the body is obscure. It is contrary to theoretical expectation. If there are no technical errors in the methods we have employed for synchronizing center of gravity and photographic observations, the data imply that the Wellesley criterion may have been based upon ill conceived subjective judgments or concepts unrelated to the consideration of gravity as an important modifier of posture. This argument gains support from an observation made by MacEwan and Howe in their first discussion of the Wellesley method of grading posture.[3] To quote: ". . . the judges were asked to state the order in which they stressed certain generally accepted factors in posture. Did they actually follow this order in assigning their grades? . . . this is the case in some instances . . . In other instances, it is evident that the judge's belief that she depends more or less on certain factors is not borne out by the correlations. Instead the reverse may be the case."

It is sometimes exceedingly difficult to assign clear-cut differentiating criteria to highly valid impressions. Standing is a complex phenomenon. Its evaluation is composed of the sum total of many diagnostic signs, changing in an infinite variety of ways. However, MacEwan and Howe's judgment of the judges, suggests that the Wellesley test may have been erected on an almost purely empirical basis. The criterion is only as good as the judges. It accurately evaluates those factors in stance conceded by popular vote to be important. These are not necessarily fundamental. They may have little to do with the basic mechanisms known to control the ver-

Table I—Showing the correlation of the Wellesley posture score with the anteroposterior eccentricity of the center of gravity.

Subject	("A") Best Posture Attainable					("R") Relaxed Stance					Both Postures
	W_1	W_2	W_3	W_4	Wt.	W_1	W_2	W_3	W_4	Wt.	Wt.
F.C.	.43	—.33	—.43	.19	.26	—.03	.10	.38	.02	.16	—.31
M.F.	.23	.39	.14	.46	.48	.22	.28	.45	.75	.72	.02
G.R.	—.19	.04	.34	—.05	.54	—.30	—.10	.09	.19	.18	—.50
E.L.	—.02	.06	.70	.06	.37	.24	.06	.51	—.26	.47	—.67
K.R.	—.07	—.47	.04	.25	.45	—.02	—.27	—.38	.32	.42	—.79
E.F.	—.28	.42	—.07	.23	—.16	—.08	—.06	.27	—.24	.02	—.06
E.H.	—.05	.22	.29	—.00	.18	.08	.09	.68	—.08	.43	.55

W_1—upper back posture; W_2—lower back posture; W_3—weight distribution; W_4—head poise; Wt.—total Wellesley score.

tical posture. The crucial test for the tenets proposed in the introductory remarks of this paper would be to examine the stance characteristics of large numbers of subjects from photographs into which an experimentally determined weight line has been introduced, and see if any pathognomonic signs of yielding to gravity associate themselves with augmentations of the gravitational stresses. It must not be forgotten that many different postures can be associated with one and the same location of the center of gravity of the body as a whole. However, there are morphological limitations to the adaptive movements possible over a stationary base. The fundamental discrepancy in the data remains unexplained.

SUMMARY AND CONCLUSIONS

Two series of 61 simultaneous biplane posture photographs, synchronized center of gravity and oscillographic observations were made at 5 second intervals on seven normal adult women of exceptionally good neuromuscular development. Each stood in her best posture and again in a relaxed comfortable stance. The profile alignment of the subjects in the 854 posture photographs was correlated with the concomitant gravitational stresses effective in the anteroposterior vertical orientation plane. The evidence presented substantiates the following conclusions:

1. Gravitational stress patterns are highly individual.

2. Body alignment measured repeatedly during uninterrupted standing is variable.

3. There is no relation between the Wellesley posture score and the anteroposterior eccentricity of the center of gravity.

4. The evidence is contrary to theoretical expectation. It is suggested that the lack of association between the variables studied may be due to reliance on a posture criterion more related to esthetic than physiological concepts.

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General Information for Physical Therapy Aides

The Publicity Division of the War Department has authorized the Surgeon General of the U. S. Army to release to THE PHYSIOTHERAPY REVIEW the following general information relative to Physical Therapy Aides on foreign duty.

The appointment of Physical Therapy Aides to Theater Hospital Units outside the continental limits of the United States is limited to women, citizens of the United States, and is made by the Office of the Surgeon General from the following groups:

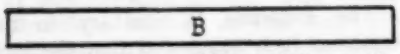
(a) Physical Therapy Aides already employed in Army Hospitals;
(b) Qualified Physical Therapy Aides in other Government agencies;
(c) Qualified Physical Therapy Aides who are enrolled with the American Red Cross;
(d) Qualified individuals who have been associated with the personnel of the unit or with the organization sponsoring the unit and have been requested by the Director of the Unit.

The salaries of assigned Physical Therapy Aides are as follows:

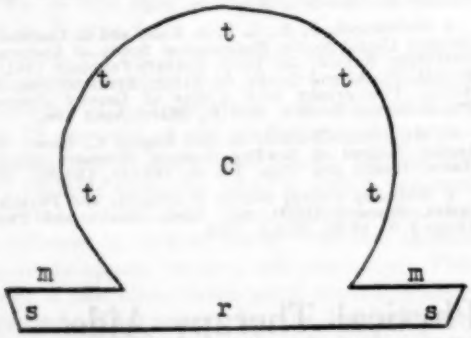
(a) Head Physical Therapy Aides—$2,000 per annum, less deductions for subsistence and quarters, when furnished;
(b) Physical Therapy Aides—$1,800 per annum, less deductions for subsistence and quarters, when furnished.

When assigned to stations within the continental limits of the United States and adequate facilities are available at the Post, Physical Therapy Aides may be furnished meals at the hospital mess and government owned quarters. If meals and quarters are furnished, deductions will be made from the employee's salary in the amount of $270 per annum to cover the cost of subsistence; $180 per annum from the pay of Head Physical Therapy Aides, and $120 per annum from the pay of Physical Therapy Aides for quarters. When the unit is on duty overseas, quarters and subsistence will be furnished the employee. Deductions for quarters will then be made at a rate of twelve dollars ($12.00) per annum from the employee's pay, and reimbursement in cash will be made to the hospital fund

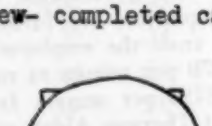
A. Double, with fold at the top. About 8½ in. wide at top, 4-3/4 in. high at midline. White organdie.



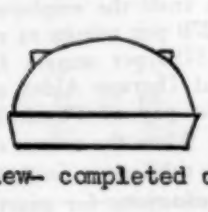
B. Band- double with fold at the top- about 2½ in. wide, and about an inch shorter than the circumference of the head. White organdie.



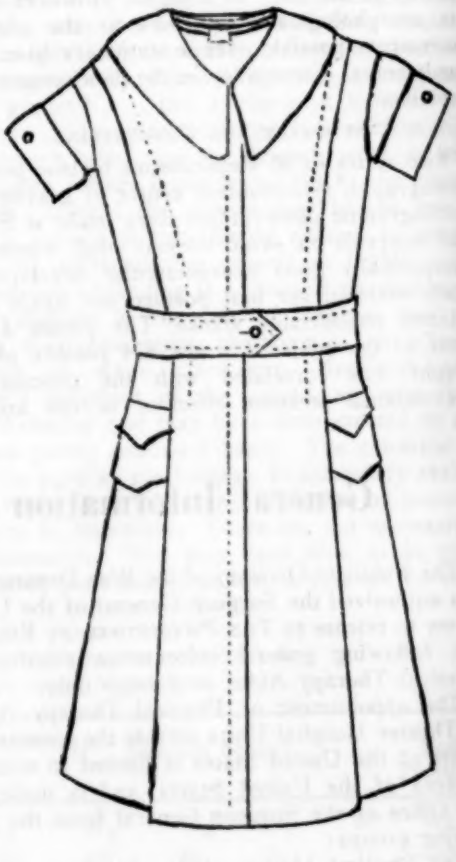
C. Sew together with French seams at "s". Turn under at "m". Gather or plait border marked "t" into "m". "r" is the circumference of the head. White organdie for Head Physical Therapy Aides- dark blue organdie for Physical Therapy Aides.



D. Rear view- completed cap.



E. Front view- completed cap.



Hospital Uniform for Physical Therapy Aides, U. S. Army Hospitals

for any meals furnished at the subsistence rate prescribed for members of the Army Nurse Corps.

This duty is entirely on a voluntary basis. At the present time Physical Therapy Aides are not entitled to the provisions of war risk insurance. They may make allotments of their salary prior to leaving the continental limits.

Each individual is issued a Certificate of Identity which entitles the owner to certain privileges and immunities as set forth by the International Red Cross. In addition, identification tags, in duplicate, will be issued in accordance with Army Regulations.

Individuals are required to pass a rigid physical examination. In addition, immunization will be completed as is prescribed for all military personnel.

Physical Therapy Aides who are not already employed in the Medical Department of the Army are required to pay their own transportation from their homes to the first station of duty. Each individual should have with her sufficient funds to cover personal expenses for the period of time involved in travel, mobilization, and for a few weeks following the arrival at their Post of Duty.

Each individual will be required to have the following articles in her possession at the time of entrance on duty:

One (1) locker trunk, approximately 30 1/2 inches long by 16 1/2 inches wide, and 15 inches deep.
One (1) medium-sized suitcase
One (1) warm robe
Underclothing
Toilet articles
One (1) pair of bandage scissors
One (1) flashlight
Two (2) hospital uniform caps and sufficient material for four (4) additional caps
Two (2) pair of white oxfords
Two (2) pair of brown oxfords
Six (6) pair of white hose
Six (6) pair of tan hose
Raincoat and rainhat
Umbrella
One (1) pair of rubbers
One (1) pair of tan leather gloves
One (1) pair of white fabric gloves
One (1) plain, tailored, brown leather purse

Drawings and description of the hospital uniform are attached. Street uniforms, coat and cape, have not yet been authorized by the War Department, but it is expected that they will be soon. If and when outdoor uniforms are authorized, civilian clothing will not be worn and will not be included in the baggage.

As regards their social life, Physical Therapy Aides will be governed by the rules, regulations and customs of the Service which are applicable to members of the Army Nurse Corps.

Uniform Specifications

MATERIAL:—Dark blue cotton material—Indianhead, everfast suiting or like material most satisfactory.
LENGTH:—Twelve (12) inches from the floor.
DESCRIPTION:—A one-piece, straight line uniform, with one knife pleat one inch wide down each side of front and back, stitched to a few inches below the waist line. Uniform is open in front to halfway between the waist and neck lines. No buttons on uniform.
SLEEVES:—Short, two inches above elbow.
BELT:—Worn at the normal waist line, is made of the same material as the uniform, 2½ or 3 inches wide, and is fastened with one or two dark buttons.
POCKETS:—Size 6 inches by 6½ inches of the same material as the uniform, and are placed on each side of the front, between side seam and pleat, and below the belt.
COLLAR AND CUFFS:—Both detachable, made of white pique. Collar three inches wide, terminating in points in front. Cuffs are straight bands, 3 inches wide, fastened with plain cuff links.
CAP:—Crown of dark blue organdie for Physical Therapy Aides, white organdie for Head Aides. Head bands on all caps are of white organdie.
SHOES AND HOSE:—White orthopedic or walking oxfords with low rubber heels. White hose.

The complete uniform described above, including the cap, will be worn by female Physical Therapy Aides and Apprentice Physical Therapy Aides when on duty.

Uniforms may be made according to the above specifications, or COD orders may be placed with: R. R. Keyes, 1611 Guilford Avenue, Baltimore, Maryland, at the following prices (plus the cost of insured parcel post):

1 Uniform and belt—$3.50 (subject to change)
1 Set of Collar and Cuffs— .85 per set
Initial minimum requirement—
4 uniforms and belts
8 sets of collars and cuffs.

When ordering state the following information:

UNIFORM:—Bust measure and the size of garment usually worn. State full length from base of center back of neck to the floor, wearing duty shoes. Allow for indentation at the waist.
COLLARS:—Number desired.
CUFFS:—The length of the cuff should be 1½ inches longer than the circumferences of the upper arm, taken loosely over the largest part of the biceps, when the elbow is acutely flexed.

For an additional 50c, name tapes will be sewed on all articles.

The
Physiotherapy Review

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BESS SEARLS

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Are you coming to the annual conference? This year it is more important than ever before to attend the national meeting. The program has been planned carefully so as to include current problems, such as the early treatment of poliomyelitis and war injuries. It cannot be emphasized too strongly the need for each of us to keep himself or herself as nearly as possible up to date in this changing world.

The officers and directors have been on the alert throughout the entire year on problems that directly concern all of us. Some of these have been reported to you in your news letters, but much more can be gained by personal contact and by attending the business meetings, getting first hand knowledge of their last minute activities.

The conference can easily be combined with a vacation for it is being held in a delightful spot, the rates are reasonable and the knowledge gained and contacts made will be worth far more than what you pay.

Attend this year! We will be looking for you at College Camp.

Nomination of Director

Due to the fact that Miss Jane Ewing has gone into Army service, Miss Margaret E. Kolifrath, Baltimore, Maryland, has been nominated as a director of the Association.

Call to Conference

The Illinois and Wisconsin Chapters extend a cordial invitation to everyone to attend the 1942 conference at College Camp on Lake Geneva, Wisconsin. An exceptionally fine program has been arranged for you. The Wisconsin Chapter has made plans for your recreation for time is being allowed each afternoon for "fun." Lake Geneva is one of the most beautiful of the inland lakes of this region, and we sincerely hope that you will join us.

THE HOSTESS CHAPTERS

Exhibits

Application blanks for educational exhibits for the annual conference may be obtained from the American Physiotherapy Association, Room 9, Worth Building, 495 California Avenue, Palo Alto, California.

A prize of ten dollars ($10) will be awarded for the best exhibit shown.

The Executive Committee feels that it is absolutely necessary for the teaching personnel of the physical therapy schools to stay "on the job." In order that their necessity to the War efforts might be recognized, we are listing the members of the American Physiotherapy Association who, as instructors in the various schools, are vitally important in the teaching program.

Bouve-Boston School of Physical Therapy:
Constance K. Greene
Mary Nesbitt
Dorothy Dudley

Children's Hospital Society, Los Angeles:
Lily Graham
Dorothy Behlow
Grace Williams
Dorothy Graves
Margaret Brummer
Lucile Grunewald
Leila Dooley
Margaret Blake
Vera Dennis

D. T. Watson School of Physiotherapy:
Dorothy Lovdahl
Lorraine Paulson
Kathryn Kelley
Jane Harrison

Children's Hospital, Boston:
Janet B. Merrill
Dorothy Frederickson
Edith M. Vail
Catherine Warren

NOTICE

Due to unusual conditions and to the small number of inquiries received, it has been decided by the Executive Committee to cancel the Graduate Program in Physical Therapy which was to have been given at Northwestern University Medical School, July 6 to 24, 1942, under the sponsorship of the American Physiotherapy Association.

Mayo Clinic:
Lucille Fitzpatrick
Mr. Carl O. Moe
Ruth Ryan

Hospital for Special Surgery (formerly Hospital for Ruptured and Crippled), New York City:
Elizabeth Westervelt
Florence Winter
Florence Liljander
Ethel Willmer

Northwestern University Medical School:
Lulu Boerner
Mildred Elson
Coralyn Davis
Mary Peabody
Mary Castle
Rubie Tuft
Dorothy Dean
Gertrude Beard

Sargent College of Boston University:
Ruth Dupee
Helen Staats
Mrs. Nina Nichols
Mrs. Lucille Fuller
Mrs. Helen Batten

Stanford University:
Evelyn Anderson
Mary McKay
Marian Williams
Dorothy Young
Catherine Worthingham

University of Minnesota, Medical School:
Sara Kollman
Frances Mast
Dorothy Baethke
Marion Denny
Olive Smith
Georgia May Schori

University of Wisconsin:
Margaret Kohli
Ellen Jackson
Mr. Peter Parisi

Above is a reproduction of a poster which the National Society for Crippled Children has distributed at their own expense to colleges and physical education schools throughout the country. The American Physiotherapy Association appreciates the service that the National Society is rendering us in obtaining physical therapists to meet the urgent demands of the armed forces.

Council on Physical Therapy

The Council on Physical Therapy of the American Medical Association has made the following appointments: Dr. A. C. Cipollaro, reappointed; Dr. George M. Piersol of Philadelphia and Dr. M. A. Bowie of Bryn Mawr, Penna., to succeed Dr. Harry E. Mock and Dr. Ralph Pemberton.

California Chapter

The Northern California, Southern California and Santa Barbara Chapters united to become the California Chapter at Santa Barbara on April 25, 1942. Thirty-one members were present. Catherine Worthingham acted as temporary chairman of the organizational meeting. A state constitution was unanimously adopted. Officers elected were: President, Margery L. Wagner; Vice-President, Virginia Dare Utz; Secretary, M. Caroline Wells; Treasurer, Virginia Horsley. The hostess chapter entertained the twenty-six visitors with traditional Early Spanish hospitality.

Northern California Chapter

The April meeting of the Northern California Chapter convened in the donor's room of the Irwin Memorial Blood Bank. John R. Upton, M. D., in charge of the Bank, reserved the evening and supplied extra staff help to care for us. Thus donating blood and the lecture of the evening were in progress at the same time. All could hear the entire description of the treatment of poliomyelitis by the Sister Kenny method given by William Northway, M. D., Director of Physical Therapy at Stanford University Hospital, San Francisco. Doctor Northway recently returned from the study and observation of the work as presented by Sister Kenny. Since food cannot be taken for four hours preceding the donating of blood, we were all ravenous when the meeting closed about eight o'clock, and we went en mass to dinner.

Ohio Chapter

The Ohio Chapter held its semi-annual meeting at the Hotel Netherland Plaza, Cincinnati, Ohio, on May 8 and 9, 1942. The following scientific papers were presented:

"Light Therapy, Its Use and Abuse"—Edwin L. Libbert, M. D., Director of Physical Therapy, Good Samaritan Hospital, Cincinnati.

"Arthritis"—Nathan Abrams, M. D., Head of Arthritis Clinic, Cincinnati General Hospital.

"Posture and Its Relation to Low Back Pain"—Charles Hauser, M. D., Orthopedic Surgeon.

"Some Comments on Sister Kenny's Treatment"—Joseph Freiberg, M. D., Associate Professor of Surgery, Orthopedic Division, University of Cincinnati College of Medicine.

"Rate of Blood Flow in Peripheral Poliomyelitis and Other Paralytic Conditions"—David I. Abramson, M. D., Associate in Charge of Cardiovascular Research, May Clinic, Jewish Hospital, Cincinnati.

"Electro-encephalography"—George L. Maltby, M. D., Instructor of Surgery, Neurological Division, Director of Neurosurgical Laboratory, Cincinnati General Hospital.

Tri-State Hospital Assembly

The Illinois, Indiana and Wisconsin Chapters of the American Physiotherapy Association participated in the Thirteenth Annual Tri-State Hospital Assembly, May 6 and 7, 1942, at the Stevens Hotel in Chicago, Illinois. The following program was presented:

WEDNESDAY

DOROTHY P. WAGNER, Chicago; Chief Physical Therapist, Mandel Clinic, Michael Reese Hospital; Chairman, Physical Therapists Section, Tri-State Hospital Assembly, *Presiding.*

Greetings from the Tri-State Hospital Assembly
EDWARD T. THOMPSON, M.D., Milwaukee; Administrator, Mount Sinai Hospital; Chairman, Public Relations Committee, Tri-State Hospital Assembly

Treatment of Scoliosis by the Wedging Jacket and Spine Fusion
JEROME G. FINDER, M.D., Chicago; Adjunct Orthopedic Surgeon, Michael Reese Hospital; Associate in Orthopedic Surgery, Northwestern University Medical School

Hand Injuries
SUMNER L. KOCH, M.D., Chicago; Attending Surgeon, Passavant and Cook County Hospitals; Associate Professor of Surgery, Northwestern University Medical School.

Discussion: A Clinic Review System for Extending Physiotherapy Services to Outpatients
From the Standpoint of the Hospital
CHARLOTTE W. ANDERSON, Indianapolis; Chief Therapist, James Whitcomb Riley Hospital for Children

From the Standpoint of the Field Service
LOUISE BAILEY, Indianapolis; Supervisor of Physical Therapy, Indiana State Department of Public Welfare, Services for Crippled Children.

THURSDAY

ELIZABETH L. YORK, Milwaukee; Chief Physical Therapist, Columbia Hospital, *Presiding*

A Critical Analysis of the Kenny Method for Treatment of Infantile Paralysis
EDWARD L. COMPERE, M.D., Chicago; Attending Orthopedic Surgeon and Chairman of the Department of Orthopedic Surgery, Wesley Memorial Hospital; Associate Professor of Surgery, Northwestern University Medical School; President, Illinois Association for the Crippled

Physical Therapy in Arthritis
VERNON C. TURNER, M. D., Milwaukee; Member of Staff, Milwaukee Children's Hospital; Consultant Orthopedist, Muirdale Sanitarium

Non-Orthopedic Conditions Treated by Physical Therapy
HERBERT POHLE, M.D., Milwaukee; Instructor in Internal Medicine, Central Nursing Division, Milwaukee Vocational School

Council on Medical Education and Hospitals

The Board of Trustees of the American Medical Association has appointed Dr. H. G. Weiskotten secretary of the Council on Medical Education and Hospitals to succeed the late Dr. William D. Cutter. A few years ago Doctor Weiskotten collaborated with the late Doctor Cutter in a personal inspection and survey of the medical colleges of the United States and Canada.

Attention: Army Aides

At the present time approximately one hundred and fifty members of the American Physiotherapy Association are now in the Service. A suggestion has come in from Lois Ransom at Camp Bowie, Texas, that we have a news column concerning your activities, both social and medical. We think this is a fine idea, for all of us are interested in what you are doing and would like to know more about it. Send your ideas and news notes to the REVIEW office now so they can appear in the next issue!

The following letter, dated Jan. 24th, was received by Mrs. Carl Welin of Chicago from Miss Barbara White of Honolulu, T. H.:

The life that existed up to seven weeks ago today almost seems like it had never been. We got a terrific shot of adrenalin in our systems that day—and it's a good thing nature arranged the effects of such as she did.

I was on duty that day—went on duty at seven, and just happened to be at the Emergency when the first victims were brought in with the report that one of our own bombs had gone off accidentally. I went about my business on the wards trying to convince myself and the patients that we were having a fancy alert. But we weren't to kid ourselves or anyone else very long—the radio was too specific—which was a good thing as it kept people from tearing out to see what was going on. The nurses did a land office business in luminal. It wasn't long before the ambulances started coming in—from then on I worked at the Emergency entrance—and saw things I never expected to live long enough to see. Everyone was marvelous. Not a murmur from the victims and I've never heard so many "pleases," "thank you's," and "will you's" in one day.

Example: About four that afternoon, some time after things had quieted down and we were putting up supplies, an elderly man came in and said, almost apologetically, "Please, ma'am, could someone do something for me?" I said, "Sure, what's the trouble?" "Well, ma'am," said he, "I've got some shapnel in my back and arm. I came in at noon, but you all were so busy I thought I could wait all right."

Rumors were running rampant all over town. No one knew anything and everyone was telling all they knew. I was told I couldn't get home but decided to try it anyway as there was nothing more to be done in our line there, and home was the place I wanted to be most after that day. No trouble getting there—in fact, everything was most awfully quiet. I did have presence of mind enough to fill the car up with gas fortunately because the next day we went on rations.

As soon as I got home we hung the windows with blankets feeling like nothing in the world so much as scenes from "There Shall Be No Night" and saying "It Can't Happen Here," and spent the evening wondering what it was all about and what was coming next. The news broadcast from London told us the most. Fine thing—getting news of what happens in your own front yard from London.

Our business for the next couple of weeks dropped to a minimum—all the patients who could be moved were sent out to make room for anything that might happen. It hasn't happened yet, and now we're working hard and fast. We spent our afternoons of the slack season putting up supplies and such.

Now, in the past seven weeks, since we got the "6th Avenue Elevated slung back at us," life has become very simple and well organized. We eat, work and sleep, see a movie or go to the beach and our evenings are spent reading, writing, and listening to the radio.

Fortunately humor goes along with everything else. As for instance—the first freighter in port after the blitz brought a load of Christmas trees—and we were wondering if we'd have enough to eat. Incidentally we had enough to eat and some Christmas trees too.

Then there was the night Mrs. Robertson asked me to bring home a loaf of bread. The stores were closed so I couldn't get the bread, but previously I had been dickering with one of the girls for her love birds—I was taking her home that night when an air raid warning sounded. She elected that moment to tell me I could have them. So I arrived home in the middle of the morning *sous bread*, but with two adorable love birds. We got the bread the next day and didn't have an air raid.

Oh-h-h, I almost forgot a main item. We in "far off Hawaii" are much pleased to be a Chapter of APA. We were getting under way nicely, but darkness, distances and gas rationing stopped our evening meetings, but we'll be going again before long in the afternoons.

Ahoha mii Kako—meaning very much aloha.

Twenty-First Annual Conference of the American Physiotherapy Association

College Camp, Williams Bay on Lake Geneva, Wisconsin

June 28 to July 3, 1942

PROGRAM SCHEDULE

SUNDAY, JUNE 28

2:00-6:00 P. M. **Registration (Fee for members, $1.00; non-members, $2.00.)**

6:00 P. M. **Get-together Supper—Illinois and Wisconsin Chapters, Hostesses.**

7:30-9:30 P. M. **Business Meeting**

MONDAY THROUGH THURSDAY, JUNE 29-JULY 2

7:15 A.M. **Breakfast**

8:00-10.00 A. M. **Physical Therapy Treatment in Infantile Paralysis**

Discussion based on the results of the recent survey under a grant from the National Foundation for Infantile Paralysis. Discussion will include physical therapy in the acute and subacute stages, convalescent stage and chronic stage.
Discussion leader: JESSIE L. STEVENSON, Orthopedic Consultant, National Organization for Public Health Nursing, New York City.
Consultant: VERNE T. INMAN, M.D., University of California, Berkeley.
Other participants will be announced in the final program.

10:30-12:30 **War Injuries**

Discussion based on the most common types of war injuries in World War II, together with their physical therapy treatment. Discussion will include physical therapy in the treatment of peripheral nerve injuries, amputations, burns and fractures.
Discussion leader: MILDRED ELSON, office of Emil Hauser, M.D., Chicago, Illinois.
Consultant: JOHN S. COULTER, M.D., Northwestern University Medical School; Chairman, Sub-Committee on Physical Therapy, National Research Council.
Other participants will be announced in the final program.

12:30-2:00 P. M. **Luncheon**

2:00-3:30 P. M. **Applied Anatomy**

VERNE T. INMAN, M.D., will discuss anatomy applied to physical therapy. Dr. Inman has done extensive work in Applied Anatomy, in which field he made a most interesting contribution to the 1941 Conference.

3:30-6:00 P. M. **Rest and Recreation**

College Camp has extensive facilities for recreation. It is suggested that individuals bring their own personal sports equipment—tennis racquets, golf clubs, etc. The Illinois and Wisconsin Chapters will organize these hours so that the members of the conference may take advantage of the opportunities offered. For instance, on one afternoon a boat trip around the lake is planned.

6:00-7:00 P. M. **Dinner**

7:00-9:00 P. M. **Crippled Children's Schools Section**

Chairman: IDA MAY HAZENHYER, Jahn School, Chicago.
Participants:
Physical Therapy Treatment—ELIZABETH JONES, Milwaukee, Wisconsin.
General Care—CAROL BANKSON, Columbus, Ohio.
Measurement of Achievement—HELEN FREDRICKSON, Kenosha, Wisconsin.
Problems of Mentality—FREDA MILLS, Chicago, Illinois.
Nursery School Child—ELEANOR FARRELL, Chicago, Illinois.
Occupational Therapy—to be announced.
Two evening sessions will be devoted to discussion of Cerebral Palsy, and two sessions to further organization and defining of objectives for the Section.

Physical Therapy Schools Section

The discussion will center around a preliminary report of the Survey of Course Content in Physical Therapy Schools, which has been made in cooperaton with the Council on Medical Education and Hospitals of the American Medical Association.

Participants:

Official representative from each of the physical therapy schools.

DR. M. G. WESTMORELAND, Council on Medical Education and Hospitals of the American Medical Association.

Allied Council

Discussion leader: HAZEL FURSCOTT, National Relations Chairman, San Francisco, Calif. Representatives from the following organizations will discuss problems of common interest and helpfulness. This will be a closed session and will report to the Conference as a whole at the Friday morning meeting.

Participants who have accepted to date are:

MISS LORAINE FROST, Chairman, Therapeutic Section, American Association for Health, Physical Education and Recreation.

MR. HOWARD A. CARTER, Council on Physical Therapy, American Medical Association.

MR. HARRY HOWETT, Director of Social Service, National Society for Crippled Children, and Committee on the Physically Handicapped of the National Conference of Social Work.

DR. A. L. VAN HORN, Assistant Director for Crippled Children, U. S. Department of Labor.

MR. BASIL O'CONNOR, President, National Foundation for Infantile Paralysis.

MISS MARION G. SMITH, Registrar, American Registry of Physical Therapy Technicians.

MISS JESSIE STEVENSON, Joint Orthopedic Nursing Advisory Service.

MISS VIOLET KINSTLE, Supervisor of Orthopedic Nurses, Columbus, Ohio.

MR. LAWRENCE J. LINCK, Associate Superintendent, Division for Physically Handicapped Children, University of Illinois.

MR. FRANK V. POWELL, Director, Bureau for Handicapped Children, Wisconsin State Department of Public Instruction.

MISS CARMELITA CALDERWOOD, Nursing Consultant, National League of Nursing Education.

MISS HENRIETTA MCNARY, American Occupational Therapy Association.

MR. BERT CALDWELL, Secretary, American Hospital Association.

DR. M. G. WESTMORELAND, Council on Medical Education and Hospitals, American Medical Association.

DR. DON W. GUDAKUNST, Medical Director, National Foundation for Infantile Paralysis—representing the American Public Health Association.

DR. JOHN S. COULTER, American Congress of Physical Therapy.

FRIDAY, JULY 3, 1942

8:00-10:00 A. M. Report from the Allied Council
10:30-12:30 Business Meeting

The dates are Sunday, June 28, through Friday, July 3. The place is College Camp, Williams Bay, on Lake Geneva, Wisconsin. COLLEGE CAMP is an outstanding conference and vacation center located on one of the most beautiful inland lakes, Lake Geneva. The picturesque location, the extensive facilities for recreation and conference meetings, as well as the comfortable accommodations and delicious meals make it an ideal spot for our annual conference.

PROPOSED RATES—COLLEGE CAMP, WILLIAMS BAY, WISCONSIN
June 28, 1942, Evening Meal, to July 3, 1942, Noon Meal

		Rates Per Person	
		Per Day	Per Period
Tents. Horseshoe Row	Double	$3.00	$13.50
	Single	3.25	14.65
Ridge and Valley	Double	3.25	14.65
	Single	3.75	16.90
Lake Front	Double	3.50	15.75
	Single	4.00	18.00
Cottages Without Bath	Double	3.75	16.90
	Single	4.25	19.15
Cottages With Bath	Double	4.50	20.25
	Single	5.25	23.65
Private Suite Cabins	Double	5.00	22.50
	Single	6.00	27.00

Recreational facilities include archery, arts and crafts, badminton, bicycling, boat rides, fishing, golf, hiking, horseback riding, horseshoes, rowing, sailing, shuffleboard, swimming, table tennis, tennis, volley ball.

The 18-hole Golf Course with Clubhouse is one of the main attractions. Guests find it very convenient to have such a fine course on the grounds. The rates are reasonable, and rental clubs are available. It is suggested you bring your own personal sports equipment. Be sure to bring your slacks, shorts, swimming suits, and other sports clothing to suit your own needs.

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ABSTRACTS

John S. Coulter, M.D.

Civilian Convalescent Treatment

J. Owen Reid, M. D., Edin., Medical Superintendent to the Princess Mary's L. C. C. Hospital, Margate. In Lancet, 1:9:278, February 28, 1942.

For some time past lack of adequate convalescent facilities for civilians has caused concern. Many of the usual peacetime arrangements are no longer available. A public health official recently informed me that "convalescence might be regarded as an unnecessary luxury in war time." Nothing, I believe, could be further from the truth.

The buildings must be comfortably furnished, with ample accommodation for reading, writing and recreation. Various therapeutic units should be provided, among them a massage department of liberal dimensions. A first class massage department is indispensable and must incorporate electrical treatment, diathermy, artificial sunlight, infra-red therapy and remedial exercises. Classes for physical exercises must be formed in several groups so that patients may progressively graduate from the elementary to the more advanced. Such measures applied to chest diseases are beneficial; patients with heart disease and those with abdominal wounds, particularly hernias, can also be given a series of carefully graduated exercises. All such classes must be conducted by skilled instructors under medical supervision.

Entertainment is an important psychotherapeutic factor in convalescence, diverting the mind from infirmity of the body. Patients must never be allowed to become bored. An established but varied routine which fills the day while leaving the afternoon free is helpful.

Occupational therapy, in comfortable and suitable workrooms, must be encouraged. Interest can be stimulated by awarding small prizes, say once a fortnight, for the best articles in the various handiwork groups.

Adynamic Ileus and Thermal Influences on Gastric and Intestinal Motor Activity

J. Dewey Bisgard, M. D., Omaha, Guy M. Matson, M. D., Detroit, and Jerome Hirschmann, M. D., Los Angeles. In J.A.M.A., 118:6:447. February 7, 1942.

Heat applied to the abdominal wall inhibited motor activity of the stomach, the small bowel and the colon. Conversely, cold stimulated tonus and peristaltic activity. When heat or cold was applied directly to the wall of the stomach by having the patient drink hot or cold water the responses were reversed. Heat stimulated and cold had a slightly inhibiting effect on both gastric and intestinal motor activity. Hot applications on the thighs had no effect, and cold ones influenced only the stomach, producing a moderate motor response. Cold applications on both abdominal wall and thighs caused a big increase in both free and total hydrochloric acid.

From the physiologic data mentioned there may be obtained some guidance for the proper clinical uses of hot and cold applications. If it is beneficial, as is generally believed, to inhibit the motor activity of the gastrointestinal tract and thereby place it at rest as far as possible in the presence of inflammatory lesions such as appendicitis and peritonitis, and of bleeding lesions, such as bleeding peptic ulcer, then hot applications and not ice bags are indicated. In the case of peptic ulcer the increase in gastric acidity following cold applications to the abdominal wall also is undesirable.

The increase in gastric acidity which follows chilling of the body surface may explain the recurrence of peptic ulcer in the fall and the spring, when there are rapid and radical changes in temperature.

Hot applications are more effective than cold ones in relieving gastrointestinal cramps, because their inhibiting effect relaxes spasm and thereby facilitates coordinated activity.

In regard to the first fluids taken by mouth by patients after operation, we have observed no difference in the response to cool and to warm fluids except that cool ones are more palatable. Ice water, however, is definitely less well tolerated.

Treatment of Arthritic Joints

Robert J. Joplin, M. D., and George J. Baer, M. D., Boston. In J.A.M.A., 118:12:937, March 21, 1942.

Deformities may be prevented by simple orthopedic management, which, to a certain extent, can be carried out by any physician who realizes the danger from neglect and who knows how to apply preventive measures. An ounce of early well directed care to prevent deformities and relieve pain until the disease process is quiescent is worth tons of reconstructive work later.

Rest, unquestionably, is the sheet anchor in the orthopedic management of arthritic joints. Comfortable support to the affected part should be provided in a neutral position or in a position for optimum use should the joint eventually become limited in motion or ankylosed. Active or guided motion (without injury) must be employed daily

in an effort to retain as much motion as possible: first, by preventing the formation of adhesions within the joint; second, by preventing contractures of periarticular structures, and third, by providing a stimulus to the articular cartilages.

Shoulder

The patient should be taught to lie with his hands clasped beneath his head for a short period several times daily, since this position permits shoulder abduction and external rotation.

During the stage of acute activity, hot fomentations applied to the shoulders greatly relieve pain and muscle spasm and permit freer motion. It is important to remember that after the fomentations are applied the shoulder should be passively guided or actively moved at least twice daily through as full a range of motion as is possible, to prevent adhesions.

Elbow

Treatment during the acute stage consists in resting the entire arm and hand in a molded plaster splint with the elbow in as much extension as can be tolerated. The arm should rest in this support most of the time but may be removed several times daily to allow guided or active motion.

After the disease has become quiescent, some of the limitation of motion may be overcome by the use of hot fomentations followed by gentle manual stretching or by allowing the patient to carry weights.

Wrist

Deformity may be easily prevented by the use of cock-up splints made of various kinds of splinting material. During the acute stage the splint may be worn constantly, or preferably, it may be removed at least once daily to allow motion or to permit other local therapeutic measures.

Hands

A splint well molded into the palmar arch and extending beyond the partially flexed fingers may prevent deformities.

In both the acute and chronic stages of the disease, dipping the hand in paraffin wax melted in a double boiler or pail is a most effective means of applying heat for the relief of pain and muscle spasm. After the use of heat, the preservation of motion may be maintained by daily voluntary exercises.

Hip

A simple device to preserve muscle tone may be arranged by supporting the leg in a padded canvas cuff suspended by an elastic cable from an overhead bed frame. The patient can do so-called bicycle exercises almost as effectively as though he were placed in a Hubbard tank.

A plaster cast in the form of a unilateral or bilateral spica is effective in securing relief from an acutely painful joint.

Knees

In the acute stage of rheumatoid arthritis of the knee, flexion deformity may be prevented and pain lessened by the use of a posterior splint worn almost constantly while the patient is in bed. This splint should be removed at least once every twenty-four hours to allow guided or active motion through as full a range as possible to prevent adhesions.

Flexion deformities may be corrected by the application of solid plaster leg casts applied in the position of maximum correction and kept on for forty-eight hours. These should then be bivalved and removed, and the joints moved through as full a range of motion as possible.

Feet

In the acute phase, when the feet are swollen and painful, weight bearing is definitely contraindicated. In such cases a plaster boot that extends from below the knee to just proximal to the metatarsal heads on the plantar surface and to the tips of the toes dorsally is usually worn with comfort. It must be bivalved so that the foot may be removed for daily motion or physical therapy. The bed clothing must be held off the feet, preferably by a cradle or by a pillow or a board placed at the foot of the bed. Foot exercises should be taught these patients as soon as the foot is pain free.

Weight bearing is allowed when swelling and pain have disappeared, provided the feet are equipped with good shoes and arch supports. So-called figure of eight walking straps may give additional support to the longitudinal arch and prevent widening of the ankle mortise. Likewise the acute bursitis accompanying hallux valgus deformities may be prevented by a simple foot cuff worn just proximal to the heads of the metatarsals.

Organic Occlusive and Peripheral Vascular Diseases: Diagnosis and Treatment

R. J. Popkin. In Northwest Med., 41:1:10, January 1942.

General measures in order of their importance are:

1. Rest. This is the most important single therapeutic agent. Absolute bed rest is of marked importance in the great majority of cases.

2. Measures relating to hygiene and care of extremities. The diet must be adequate and well balanced. There must be a high liquid intake, approximately sixteen glasses daily. Cold showers and drafts must be avoided. Smoking is absolutely forbidden. The patient must be warmly clothed with long woolen underwear and wool lined high topped shoes. The nails should not be trimmed too closely.

3. Postural exercises. These are as important to the patient suffering from a circulatory deficiency as insulin is to the diabetic. They must be performed for many hours daily, the minimum being three hours before beneficial results may be expected. These exercises must be done in a warm, draft-free room.

4. External heat. It is applied in many ways. Caution must be exercised to avoid burns: (a) a sitz bath nightly for ten minutes in plain, tepid water, (b) reflex heat using the infra-red lamp applied to the upper part of the body, (c) a foot cradle in the bed with a single 25-watt bulb. This maintains the temperature about 90 F, (d) short wave diathermy applied cautiously to the thighs.

5. Intermittent venous occlusion, using the Collins-Wilensky method. If this is not available, satisfactory results may be obtained with an ordinary blood pressure apparatus.
6. Drug therapy. Very few drugs help.
7. Hypertonic intravenous saline has been successful in many cases of thrombo-angiitis obliterans.
8. Use of dilute U. S. P. hydrochloric acid orally is of great value in the nocturnal cramps of the arteriosclerotic.

Special measures:
1. Nerve block.
2. Lumbar or cervical sympathectomy.
3. Local treatment of ulceration requires much care.
4. Typhoid fever therapy is occasionally successful in healing of ulcerations.

For best results in treatment of vascular disorders a combination of general and specific measures must be used.

Rehabilitation Under the Workmen's Compensation Act.

By A. L. Lomey, M.B., Ch.B., Specialist in Physical Medicine, Johannesburg, South Africa. In Canad. J. Occup. Therapy, October 1941.

Rehabilitation is defined as "the process of reconditioning required in certain cases, after clinical treatment, in order to obtain full restoration of working capacity," and it may here be stressed that it therefore goes beyond the stage of mere medical recovery.

In the *British Medical Journal* attention is drawn to the three stages in the treatment of an injury, particularly one involving a bone or joint. First comes the surgical approach which is followed immediately after by a period of rest and immobilization. Next comes a period in which physical therapy is the main form of treatment. Lastly a stage of graduated work is introduced with the object of effecting restoration to complete function. The term "rehabilitation" is applied to the third stage only, that is, the period between the completion of the surgical and physical therapy treatments and the time when the patient is fit to resume work.

Rehabilitation aims at providing for the injured person the opportunity of being restored completely to his former useful life. Where such a perfect result is not possible it seeks to afford the chance of restoring to as near the normal as practicable, such powers and faculties as the patient may have left to him.

Only a percentage of the injured require to be rehabilitated. In peace time this is estimated at 30 per cent.

This can best be illustrated by quoting the figures of Dr. Nichol who points out that 200 partially disabled miners, who might have been completely rehabilitated by adequate measures, represent a loss to the industry of 100,000% in compensation, whereas the cost of setting up a rehabilitation center capable of handling such 200 cases is estimated at 3,000%.

Apart, however, from the question of compensation, a saving may be effected in other directions. This can be accomplished in the second stage of treatment. With the completion of the first stage any further measures required are spaced out at intervals of one day, two days, or even less frequently still. As each treatment takes between half an hour to an hour, the rest of the day is often inadequately spent. If such a patient, after visiting his physician or the therapy department, were instead directed to the curative workshop, he would not only be spending his time usefully, but would be contributing to the more rapid recovery of his disability. This saving of time means a smaller bill for sick-pay—no inconsiderable item—and perhaps some economy in medical expenses.

From a humanitarian point of view the claim of an injured workman for the right to be rehabilitated, and thus be put in a position to earn his own livelihood, is irrefutable. Any community which neglects to do this is likely to find itself in the position of of having to maintain that workman for the rest of his life.

Rehabilitation assumes special significance in wartime. In the first place conservation of man-power becomes a matter of importance as the war drags on, and a careful rehabilitation scheme will help materially in this respect. Secondly, in a conflict such as this present one, the civilian population suffers as heavily as, if not more than, the combatant units. It seems likely, therefore, that rehabilitation will be necessary to salvage workers for the production of those machines, munitions, ships, planes, etc., so vital to the successful prosecution of the war. While the latter contingency is hardly likely to arise in South Africa, the former is a distinct possibility, and there is already evidence that the military authorities are fully conscious of the fact.

Regeneration in the Ulnar, Median and Radial Nerves

Henry C. Marble, M. D., Edward Hamlin, Jr., M. D., and Arthur L. Watkins, M. D., Boston, Mass. In Amer. J. Surg. LV:2:274, February 1942.

This report summarizes the results in 110 injured ulnar, median and radial nerves, treated at the Massachusetts General Hospital during the years 1931 to 1940. Eighty-four and five-tenth per cent were considered to have shown satisfactory end results based on arbitrary criteria. Ulnar nerves successfully regenerated in 88 per cent, median in 82 per cent and radial in 78 per cent of their total numbers.

It could not be established that the age of the patient, the presence of infection in wounds or the time interval between injury and treatment had any bearing materially upon the eventual outcome. The average rate or regeneration lay between 1 and 1.5 mm. a day.

Nerve injuries associated with fractures are discussed separately and are shown to regenerate successfully in 95.7 per cent of their total number.

A new technic of determining electrical excitability in peripheral nerves is described and methods of treatment are outlined.

Management of Burns in Children: An Analytic Study of Two Hundred and Fifty Cases

H. Jerry Lavender, M. D., Cincinnati. In J.A.M.A., 118:5:344, January 31, 1942.

The author discusses the comparative results of the following methods:

The use of crust formers or coagulants, the use of wet dressings with antiseptic solutions, the compression or closed method and the tubbing procedure. No case is included in which less than 10 per cent of the skin area was involved.

The tubbing procedure should be classified as a combined method. It has been described in detail in a previous publication.

This method has several advantages. The water bath is well tolerated, the wounds and especially the sloughing areas are kept cleaner, relaxation from muscle tension and spasm is afforded after a few minutes and mild exercises of the involved members may be encouraged and started earlier. Contractures may be prevented in the majority of cases, and by not interfering with the granulation tissue the wounds heal rather rapidly or are prepared earlier for grafting. Here again, in an extreme or extensive case, or one of borderline involvement, after the original cleansing bath and debridement the patient may remain in bed for two or three days before the tubbing procedure is instituted, the wet dressing method being enforced in the interim.

The tubbing method is indicated when the trunk is involved, and especially the genitalia, or when a combination of the trunk and other areas are involved. It is an ideal method when the hands or feet are involved, and at this point I wish to emphasize the use of the continuous water bath when the hands or feet alone are burned. With specially constructed metal fixtures in the form of boots for the feet and long troughs for the forearms and hands, the involved members are submerged for hours at a time, resort being made to wet dressings between dippings. I have observed 2 cases in which, with the water bath alone, spontaneous amputation of one or more toes occurred after a deep burn of the foot in which gangrene had developed.

The aqueous solution of soft soap, if properly made, is nonirritating, and at no time have I encountered a dermatitis or irritation directly attributed to the soap.

Debridements should be thorough and complete, aseptic technic being used in all cases.

In spite of condemnation by many workers, wet dressings have their place in therapy for burns; likewise the crust formers, the tubbing method and the compression procedure. Combinations of the methods may and should be used to enhance the desired end result.

In a series of 250 burned infants and children, every one survived who lived to the tenth day. There were 14 (5.6 per cent) deaths, with pneumonia topping the list of contributory causes.

The Cervico-Brachial Syndrome

K. G. Hansson, M. D., Assistant Professor, Orthopedics, Cornell University Medical College, New York, New York. In Arch. P. T. 22:11:662, November 1941.

1. Cervical ribs, spastic scalenus anticus muscle and poor posture may produce identical symptoms.

2. The common cause in all cases is probably a lowering of the tonus in muscles supporting the scapular weight. The irritation, traction and pressure on the cervical nerves and subclavian vessels of the first rib, a cervical rib or a spastic scalenus anticus muscle in all probability explain the cervico-brachial syndrome.

3. This syndrome includes pain along the brachial nerves, vascular changes of pulse and blood pressure, vasomotor symptoms of pallor, cyanosis and changes in temperature and, in addition, tenderness over the scalenus anticus muscle and the brachial plexus.

4. The conservative treatment of rest and support, heat to relieve pain and spasm, massage to increase muscular tone and exercises to build up muscular support is essential. Postural correction of body mechanics is important. Although surgical interference is necessary in a small percentage of cases and circulatory failure in the arm may mean an emergency operation, the majority of the cases respond to conservative treatment as outlined here. Even in operative cases the procedure outlined here is of complimentary importance.

Syphilis: Review of the Recent Literature

Charles F. Mohr, M. D., Paul Padget, M. D., Richard Hahn, M. D., and Joseph Earle Moore, M. D., Baltimore. In Arch. Int. Med., 69:3:470, March 1942.

Ewalt and Ebaugh have undertaken the long term comparative evaluation of artificially induced fever by mechanical means and inoculation malaria by the only method which offers any prospect of giving a definitive comparison, i. e., the unselected assignment of alternate patients to one or the other method of treatment. They present the results of a five year study of 232 patients with dementia paralytica, half of whom have been treated with artificial fever and the remainder with inoculation malaria. The follow-up treatment was as nearly identical as could be gained in the face of the vagaries of clinical practice. The authors summarize their results as follows:

The method of therapy with artificial fever has been safer and has been productive of better results. The importance of follow-up care is emphasized. Improvement in the care of patients during malaria therapy and more attention to follow-up medication has improved the results of malaria therapy in our clinic, though these results still remain inferior to the results obtained with artificial fever therapy.

Patients with physical contraindications to therapeutic malaria may in many instances be safely treated with artificial fever therapy. Either method is reasonably efficient if properly managed and if general follow-up treatment and care are adequate.

An Outline of the Diagnosis and Treatment of the Common "Rheumatic Diseases"

A synopsis prepared by the Military Preparedness Committee of the American Rheumatism Association. In Army Medical Bulletin No. 60, January 1942.

In the discussion of the treatment of rheumatoid arthritis it is stated that no one remedy is sufficiently potent to be used to the exclusion of all others; several measures should be used in combination. Various remedies might be grouped thus:

A. *Measures of undoubted value.*
- Rest: extra rest for body and joints.
- Analgesics.
- Physical therapy.
- Diet: nutritious (generally a high calorie, high vitamin, anti-constipation diet).
- Mechanical supports.

B. *Additional special measures of value.*
- Special surgical and nonsurgical (splints, weights, etc.) procedures for the prevention or correction of deformities. Occupational therapy.

C. *Measures of probable value.*
- Foci: removal of obviously infected foci, if patient's condition warrants.
- Foreign protein.
- Chrysotherapy.
- Blood transfusions.

D. *Measures of very limited, uncertain, or questionable value.*
- Roentgen therapy.
- Fever therapy.
- Vaccines (nonreacting).
- Concentrated vitamin preparations.
- Sulphur.
- Preparation of bee venom and formic acid.
- Injections of chaulmoogra oil.
- Neoarsphenamine.
- Climatotherapy.
- Various medicines, such as benzoates, iodides, and arsenicals.
- Endocrine preparations.
- Special diets.
- Special intestinal treatments, such as irrigations and antiseptics.
- Surgical operations, such as sympathectomy, thyroidectomy, parathyroidectomy, splenectomy, and bone drilling.

Details of Treatment

Rest. Extra rest for body and joints in positions favorable for general body mechanics is generally required: 10 to 20 hours of rather complete rest daily, but rest should not be overdone. It is a question, not of *rest versus exercise,* but of *rest and exercise,* the proper kind and amount of each. Ambulatory patients with mild or moderate arthritis should be encouraged to work at nontraumatizing activity.

Exercises. These should not be casual, but specific for the affected joints. Nonweight bearing, nontraumatizing exercises preferred. Avoid types and amounts of exercise which make joints feel worse that night or next day.

Physical Therapy. No one type exclusively preferred. Use that which is simplest and, if possible, most analgesic to the individual patient.

Special Therapy for Rheumatoid Spondylitis. Postural and other spinal exercises; rib-stretching and deep-breathing exercises; use bed with firm mattress, light board under mattress. Patient should use only one pillow under head; for an hour or more daily no pillows under head, small pillow between scapulae (if thoracic kyphosis occurring) or in lumbar region (if lumbar flattening is dominant) to prevent or correct kyphosis. Taylor brace or hyperextension frame often required.

In the treatment of osteoarthritis the following points are emphasized:

(1) Reassurance: the condition is a nuisance, not a calamity, and will not notably stiffen joints or seriously cripple the patient with the exception that hips sometimes become quite painful and notably limited in motion. (2) Rest and reduction of occupational or static trauma (obesity); use of elastic knee supports, lumbar belt, temporary fixation in plaster casts, etc. (3) Daily physical therapy. (4) Analgesics. (5) Vitallium mold arthroplasty useful in advanced osteoarthritis of hips.

Development of a Physical Therapy Department

Arthur L. Watkins, M. D. In Hospitals, 15:12:88, December 1941.

The growth and increasing usefulness of a physical therapy department is dependent upon an increasing number of referring physicians who become aware of what kind of treatment may be given and what results may be expected. This usually calls for some sort of educational plan for the hospital staff.

We have experienced a rapid increase in demand for physical therapy during the first six months, 1395 treatments were given the first month and 2311 the sixth month, an increase of 87 per cent. The orthopedic department referred 45.3 per cent of the new cases including ward and clinic patients. The percentage of cases from the other departments were as follows: private patients, 16; dermatology, 9.3; surgery, 4.8; eye and ear, 1.3; psychiatry, 0.5. The frequency of use of the different types of treatment available may be of some interest. The total number of treatments for six months have been summarized in tabular form. Attention is drawn to the fact that the more complicated and expensive electrotherapy such as diathermy, ultraviolet irradiation and use of low frequency currents made up approximately only ten per cent of the total treatments.

The main expenses in the running of the department are the salaries of the director and technical staff. The laundry, repairs, and supplies may be kept at a minimum by careful use. Due to the increase in the number of treatments with little increase in costs our average monthly deficit was decreased from five hundred, sixty-one dollars for the first two months, to seventy-six dollars for the sixth, seventh, and eighth months.

Internal Radiant Heat in Lesions of the Pelvis

Bengt Norman Bengtson, M. D., Maywood, Ill. In Arch. P. T., 22:12:711, December 1941.

The pelvic heating device described utilizes radiant energy as the heating medium. The entire unit weighs less than 10 pounds and can easily be transported. A treatment may be kept up almost indefinitely, certainly for three to ten hours, with the patient remaining reasonably comfortable, either sleeping, reading or knitting. The patient is able to assume almost any conventional position during therapy or can change from the supine to the prone position without the heating unit's being either removed or disturbed.

This unit is believed to be the simplest, yet the most effective device for heating deep tissues of the vagina in pelvic inflammatory disease. There is no discomfort from distention by bag applicators and no danger of necrosis from prolonged pressure.

The Kenny Treatment of Infantile Paralysis During the Acute Stage

By Philip Lewin, M. D., Associate Professor of Bone and Joint Surgery, Northwestern University Medical School Chicago. In Ill. Med. J., April 1942.

Lewin emphasizes the fact that it is impossible to carry out the Kenny method without prolonged personal observation of her work, and an intensive study of her method. It cannot be done from the printed sources now available.

The method will be used on an empirical basis, at the moment.

The chief points in treatment are that Miss Kenny employs hot fomentations and muscle reeducation but does not use splints, respirators, braces or massage.

One of Miss Kenny's contributions is the direction of attention of the medical, nursing and physical therapy professions to the importance of treatment during the acute stage of the disease.

There is no doubt that her treatment abolishes pain and stiffness and minimizes the occurrence of deformities. It prevents contractures, lessens the degree of paralysis and, by treating the symptoms which appear in the acute stage, procures a higher percentage of full recovery than any other method.

Among the most important practical benefits derived from this treatment are the rapid relief from pain and sensitiveness and the prevention of contractures.

Gross deformities either do not occur or are minimal.

Undesirable visceral disturbances are not evident. Contractures are absent.

The discipline of assistants and patients is excellent.

The author states: "My observations of her personally treated patients revealed that they were in better condition than any similar group I have seen anywhere in the world. These observations included general physical and mental conditions, central and sympathetic nervous systems, psychological reactions and the physical condition of the muscles, the circulation and the metabolism."

Some Orthopedic Procedures Employed in the Treatment of Arthritis

John Bastow, M. D., F. R. C. S. In Proc. Royal Soc. Med., XXXV:2:80, December 1941.

Abstract—(1) A series of six cases of ankylosing spondylitis was shown to illustrate the benefit gained, even in very long-standing cases, by the following regime:

(a) Complete rest in a plaster shell.

(b) Gradual correction of kyphosis by adding thin layers of padding under the dorsolumbar junction, and subtracting similar layers of padding from under the head, to increase extension in the spine.

(c) Deep-breathing exercises practiced constantly while the patient is lying in a plaster shell.

(d) Daily physical therapy.

(e) The fitting of a Goldthwaite spinal brace to maintain the position of maximum correction that has been obtained.

The improvement was manifested in all cases by alleviation of symptoms, improvement in posture, and increased chest expansion.

(3) A case of arthritis of the tarsal and metatarsal joints, illustrating relief of symptoms afforded by the application of a plaster boot.

(1) A series of six cases of spondylitis ankylosans was shown to illustrate the routine of treatment carried out at the Royal National Hospital for Rheumatic Diseases, from an orthopedic point of view.

All cases on admission are supplied with a plaster bed, which extends from the vertex to the sacrum in cases where the disease is confined to the spine itself, and extending to the knees or midcalves in cases where the hips are affected.

Each patient is encouraged to lie supine in his shell for as long as possible, with the aid of regular sedatives, until, in a very short time, he spends the whole of the twenty-four hours in his plaster, except for the period during which he is undergoing physical therapy. Gradual improvement of posture is obtained.

(a) By the regular performance of deep-breathing exercises.

(b) By the insertion of thin strips of woolen material under the spine, wherever the ankylosis is not complete, and especially at the dorsolumbar junction. By this means, a surprising amount of correction of the kyphosis can be obtained within a few weeks, and the chest expansion improves considerably.

Persistent local pain in resistant cases is treated by application of deep X-ray therapy, when ordinary physical therapy fails to bring relief.

When it is judged that the maximum degree of correction in a particular case has been obtained, the patient is fitted with a Goldthwaite spinal brace and allowed up for gradually increasing periods. He spends the night in his plaster shell and takes it home with him, with instructions to continue its use until long after all symptoms have disappeared, and to return to its use at the first sign of recurrence of pain or increase in deformity.

The Management of Acute Nasal Sinusitis and Its Complications

C. Gill-Carey, F.R.C.S. Surgeon, Central London Throat, Nose and Ear Hospital. In Practitioner, CXLVIII:884:70, February 1942.

Vitamins—The vitamin C intake should be kept at a high level, 400 to 500 milligrammes of ascorbic acid daily.

Sulphonamide Therapy—Common sense and an understanding of the action of the sulphonamide group of drugs will enable full use to be made of this valuable aid. As Whitby (1941) pointed out, these drugs no not act in the presence of pus, and they have little effect on bone infections.

Heat is useful addition to other forms of treatment, and may be applied simply by a hot-water bottle or electric light bath. Short wave diathermy is the most efficient means of applying heat and, in many cases, shortens the duration of the attack. Caution in ordering this form of treatment should be observed, however, as in the presence of obstructed drainage serious exacerbations may result from its use. Local treatment must be adapted to the pathological conditions present and to the particular sinus or sinuses involved.

Medicolegal Aspects of Physical Medicine: Prevention of Legal Claims and How the Physician Should Safeguard Himself

By John S. Hibben, M. D., Pasadena, Calif. In J.A.M.A., 118:13:1038, March 28, 1942.

A physician prescribing physical therapy may decline or refuse outright to render services if for any reason he should prefer not to do so. However, if he has agreed to do so he has assumed a contract and is liable for any damages which may result from failure to fulfil or complete his contract.

The physician is responsible for any negligence on the part of the person to whom he has assigned a duty, even though she is employed and paid by the patient.

The author believes that the majority of medicolegal cases involving physical medicine are brought against members of the regular profession who merely dabble in physical therapy and are not so often brought against the physician who specializes in part or entirely in physical therapy. The author considers this subject under the following topics: general precautionary measures, precautions to be observed in the use of specific energies, manipulation of deformed joints, hydrotherapy, paraffin bath, galvanic current, colonic therapy, consultation, insurance and billing the patient.

Effect of Electrotherapy on Denervated Muscles in Rabbits

By Ernest Gutmann, M. D., and Ludwig Guttmann, M. D. In Lancet, 1:6:169. February 7, 1942.

These authors made a study of the effect of the galvanic current on denervated muscles and have given particular attention to: atrophy of the denervated muscles; electrical excitability and contractility of the denervated muscles; and time and quality of recovery of function of the re-innervated muscles.

The muscles used were the group supplied by the peroneal nerve in 6 rabbits. In 4 of these the peroneal nerve on both sides was completely interrupted by crushing with fine forceps approximately 80 mm. from entry into the peroneus longus muscle. In 2 others the peroneal nerve was cut at the same level and the stumps joined with plasma. The effect of the operation was in all cases a complete motor and sensory paralysis in the distribution of the peroneal.

In all cases systematic exercise by galvanic current was then carried out on the paralyzed muscles of the left leg while the paralyzed muscles of the right leg remained untreated. Electrical exercise was carried out daily for 15-20 min. at a current strength of 4-6 mA by means of a dry battery apparatus of 120 volts. This current intensity is sufficient to elicit strong contractions in the individual muscles without apparently giving rise to pain. During the 20 min. of treatment about 500-600 single contractions of the muscles were elicited by means of a cathode in the form of a moist pad 3 mm. in diameter applied to the distal part of the muscle.

During the first two weeks after operation electrotherapy did not prevent atrophy. During the subsequent weeks, however, circumference decreased more slowly on the treated side in all ainmals. This effect started within 10-14 days after the onset of treatment. In no case did the atrophy of the treated side reach such an extreme degree as that of the untreated side. Moreover, in all cases the exercises accelerated the recovery from atrophy once the muscles had become re-innervated, and the circumference of the leg on the treated side reached its normal measurement more quickly than on the untreated side.

At various intervals after recovery of function a biopsy was made. In all cases there was a striking difference in the appearance of the exposed muscles; the muscles on the treated side were undoubtedly larger than those of the untreated one, and seen by the naked eye hardly differed from normal muscles. In all cases there was a definitely lower threshold of direct faradic excitability of the exposed muscles on the treated side.

The muscles were fixed in formalin, embedded in paraffin and stained by either the Masson or the Mallory trichrome technic. Both transverse and longitudinal sections were made. Sections from the treated and untreated side of the same muscle were mounted on the same slide and thus stained identically, in order that the histological picture should be strictly comparable. The sections showed that the muscle-fibers on the treated side were of greater diameter and with more apparent cross striation. The treated muscles showed a thinner outer connective-tissue sheath and there was much less connective tissue between the individual muscle-fibers than in the untreated muscles.

Traumatic Neuroses and Psychoses

Louis J. Karnosh, M. D., Cleveland, Ohio. In Western J. Surg., 49:11:606, November 1941.

The treatment of true traumatic brain disease, particularly if the mental and physical symptoms are pronounced, is a long and painstaking ordeal. However, it is worth the effort, for in time, 75 per cent of these patients show a gradual but definite improvement.

Above everything else, the patient should be maintained in a quiet, restful place, free from worry or excitement. Few associations should be allowed to avoid the provoking of irritability, quarrelsomeness and emotional explosions.

Where there are focal types of defect such as aphasia or paralysis, of prime importance are re-education and training by experienced instructors under the direction of the physician.

Various forms of occupational therapy beginning with the simplest procedures has a decided palliative effect in reestablishing the powers of attention and mental effort, as well as reducing the irritability and agitation.

Nearly 50 per cent of all patients who have suffered a mild or even insignificant concussion come to the neuropsychiatrist with a syndrome which is tantalizing to the doctor because of neurologic signs there are none and of subjective symptoms there are many.

The working capacity of those patients is very poor and an insistance on dispatching such patients back to work prematurely invariably results in a fresh collapse.

Ideal treatment is rest and seclusion away from noise, excitement and out in the open air. Simple exercise such as walking is preferred and is to be encouraged. Straining at physical labor or violent movement of the body is not recommended.

In every case of head injury where litigation is pending and the physician may be called to testify, he should be fortified with certain facts.

The pretraumatic history should include the following:

a. The general nature of the patient's normal personality.
b. Records of previous nervous or mental illness.
c. History of alcoholic habits.
d. Domestic compatability.
e. Financial status.
f. General reputation.

In the inspection and examination of the patient the following data are pertinent:

a. The patient's attitude in reference to litigation.
b. His ability to tell the truth.
c. His tendency to exaggerate symptoms.
e. His suggestibility.
f. His efforts at malingering.

Three great trends in human behavior as a reaction to head injury have been presented. It is needless to add that this interpretation is a general one and that many individuals show a mixture of all three of these tendencies.

This rather tedious discourse at least serves to impress one with the immensity of the problems which come in the wake of head injury. Of a further increase in the number of such injuries we are certain; for a clearer knowledge of what to do in each individual case, we can all continue to labor. The subject as a whole is not only a challenge to the neurologist, surgeon and psychiatrist, but the consequences of head trauma claim the attention of the industrial physician, insurance companies, state industrial commissions, legal authorities and in fact every individual who has an interest in the preservation of human life and health.

Blood Volume and Exercise

Donald E. Cassels, M. D., and Minerva Morse, Ph. D., Chicago, Ill. In J. Pediatrics, 20:3:352, March 1942.

Kaltreider and Meneely have reviewed the literature relating to the effect of exercise on the volume of the blood. They found that studies previous to theirs "have indicated that as a result of exercise there is an increase in the concentration of red blood cells and hemoglobin." It was suggested that red blood cells were extruded from blood depots or that there was a change in the concentration of blood due to passage of fluid from blood to tissues. They found no unaminity of opinion relative to blood volume during and after exercise, since observers found in dogs and in man, either increases or decreases in volume.

In seven normal subjects these authors found, using the blue dye, T-1824, a prompt and definite decrease in plasma volume in every instance with elevation of arterial and venous pressures but with no correlation between increase in pressure and decrease in volume. They found the changes in cell volume to be variable and slight.

Our findings are in accord with these observations. There has been in almost every instance a definite increase in the protein concentration in the serum, which is considered to represent inversely a diminution of plasma volume, since there is no known depot for plasma proteins and since the leakage of protein from the blood in the plasma filtrate is negligible. Determinations of the blood volume following both moderate and vigorous exercise by the use of the indirect dye method in eighteen experiments have shown an even greater diminution of blood volume than would be indicated by estimation from changes in the serum protein alone.

It is also seen that while the diminution of plasma volume is of a definite and perhaps significant degree in those subjects having symptoms or signs of shock or circulatory collapse, this cannot be the only factor, since in other instances there have been decreases of equal or greater magnitude with no circulatory or clinical changes comparable. It is impossible to say, since in some children there is a marked emotional factor, whether there is at the time simple vagal syncope, or ordinary fainting. However, these abnormal reactions to exercise occur uniformly after exercises, never before, and usually directly afterward. We believe that low blood volume is at least a factor in instances of collapse after exercise and that it

may play a role in the reactions frequently seen in strenuous competitive athletics.

We further suggest, although we have no direct evidence, that rapid fall in blood pressure during the recovery period with rapid diminution of vasomotor tone may occur at a rate in excess of the restoration of the plasma filtrate and blood volume, and that consequently a relative blood volume deficiency may, in some instances, result in the abnormal reactions previously described.

Although blood sugar levels are not shown in the protocols, such determinations were done, and hypoglycemia is not found following the periods of exercise used in these observations.

Physical Therapy Technicians

Alden B. Mills. In Modern Hospital, 58:1:59, January 1942.

The average salary of physical therapy technicians, including the fair cash value of maintenance, is $124 per month, according to reports sent in for THE MODERN HOSPITAL'S salary survey. A total of 297 hospitals reported salary for such technicians from the 1244 hospitals sending in data for tabulation.

The overall average salary paid physical therapy technicians represents a more standardized salary condition than exists among most of the other employee groups covered by this nation-wide survey.

Book Reviews

THE MEDICAL ASPECT OF BOXING. By Ernest Jokl, M. D., Head of Department of Physical Education, Witwatersrand Technical College, Johannesburg, South Africa, Consultant, Medical Aspect of Physical Education, S. A. Defense Force. Cloth. Pp. 251, with 59 illustrations. Pretoria: J. L. Van Shark, Limited, 1941.

The results of the studies presented in this volume distinctly show that the consequences of blows received in boxing divide themselves into two clear categories. These are (1) the immediate effects of punches received in a fight, and (2) the remote sequelae of innumerable blows, more especially of those to the head. The former considers chin knock-outs, concussion, solar plexus knock-outs, and its effects, heart knock-out, carotid sinus knock-out, and many other accidents of boxing. Among the permanent pathological consequences of boxing the author shows that the term "punch drunk" as it is commonly used actually refers to a number of greatly different conditions. He describes in detail many of these injuries.

The author concludes that the combination of factors which he describes are such as to render boxing dangerous, and therefore an undesirable form of physical education. Head injuries are really routine occurrences. He believes that the fundamentally healthy tendency of young people to disregard and conceal pain, physical disabilities and injuries makes it possible for injured brains to be subjected to repeated traumatization. This is a serious condition because the regenerative powers of the central nervous system are distinctly inferior to those of other somatic tissues. The author states: "If this monograph will serve no other purpose than to immediately effect the elimination of boxing from the physical training programme of the armed forces and more especially of the air force, it will have fulfilled an important task." This book should be in the library of every physical educator.

FATIGUE OF WORKERS: ITS RELATION TO INDUSTRIAL PRODUCTION. By Committee on Work in Industry of the National Research Council. Cloth. Price, $2.50. Pp. 165. New York: Reinhold Publishing Corporation, 1941.

This is a report of a committee consisting of Lawrence J. Henderson, Professor of Chemistry, Fatigue Laboratory, Harvard University; W. S. Hunter, Professor of Psychology, Brown University; Elton Mayo, Professor of Industrial Research, Graduate School of Business Administration, Harvard University; G. A. Lennock, Manager, Apparatus and Cable Division, Western Electric Company; G. Canby Robinson, Lecturer in Medicine, School of Medicine, Johns Hopkins University, and F. W. Willard, President, Nassau Smelting and Refining Company.

The following subjects are considered: heat and high altitude; some industrial causes of illness; the Western Electric researches; the interviewing method; self-expression and labor unions; extra-time allowances and a study of organization.

This study shows that the efficiency of workers is affected by certain physical conditions of work. On the other hand, the efficiency of workers often is affected by what can only be called the "psychological" or "social" conditions of work. This volume should be in the library of those interested in industrial medicine and surgery.

PSYCHIATRY IN MEDICAL EDUCATION. By Franklin G. Ebaugh, M. D., Professor of Psychiatry, University of Colorado School of Medicine; Director, Colorado Psychopathic Hospital; Director, Division of Psychiatric Education, National Committee for Mental Hygiene, and Charles A. Rymer, M. D., Associate Professor of Psyciatry, University of Colorado School of Medicine; Assistant Director, Colorado Psychopathic Hospital. Cloth. Price, $3.50. Pp. 643. New York: The Commonwealth Fund, 1941.

The senior author of this textbook is well known for his leadership in the problems of psychiatric education. He and his associates have traveled far and wide studying psychiatric work in medical schools, dispensaries and clinics throughout the country. In this volume a wealth of data has been collected to evaluate the present status of general psychiatric training both in the undergraduate medical schools and in special graduate psychiatric institutions. Anyone interested in the subject of psychiatric teaching will find problems and their solutions dealt with very ably in this valuable contribution.

THE PRINCIPLES OF NEUROLOGICAL SURGERY. By Loyal Davis, M. D., F. A. C. S., Ph. D., D. Sc. (Hon.), Professor of Surgery and Chairman of the Division of Surgery, Northwestern University Medical School, Chicago, Illinois. Second Edition. Cloth. Price, $7. Pp. 503, with 154 engravings containing 298 illustrations and 5 colored plates. Philadelphia: Lea & Febiger, 1942.

This is the second edition of a book on neurological surgery which has been well received, especially by the general physician and the medical student. After introductory chapters on neurological diagnosis, in which a brief yet practical review of the anatomy of the nervous system is dealt with, the author describes the more common nervous system lesions in which surgery is indicated. Chapters deal with craniocerebral injuries, intracranial tumors and abscesses, spinal cord injuries and lesions of the peripheral nerves. Special chapters on the surgical treatment of pain, hypertension, and other conditions thought to be associated with disturbances of the sympathetic nervous system are especially timely and informative. The book can be highly recommended.

BIOLOGICAL SYMPOSIA: A SERIES OF VOLUMES DEVOTED TO CURRENT SYMPOSIA IN THE FIELD OF BIOLOGY. Edited by Jacques Cattell. Volume III: MUSCLE. Edited by Wallace O. Fenn, Professor of Physiology, School of Medicine and Dentistry, University of Rochester, Rochester, N. Y. Cloth. Price, $3.50. Pp. 370. Lancaster, Penna.: The Jacques Cattell Press, 1941.

This volume is the result of a symposium on the resent advances in muscle physiology. It consists of a series of articles by outstanding investigators. Chapters dealing with single muscle fiber function, action potentials and conduction of excitation in muscle, the minute chemistry of muscle action, electrical phenomena accompanying neuromuscular transmission, the nature of certain diseases of skeletal muscles, and other aspects of muscle physiology are included. It is an excellent reference text on the subject of recent muscle research.

BIOCHEMISTRY OF DISEASE. By Meyer Bodansky, Ph. D., M. D., Director John Sealy Memorial Laboratory; Professor Pathological Chemistry, University of Texas School of Medicine; and Oscar Bodansky, Ph.D., M. D., Lecturer in Biochemistry, Graduate Division, Brooklyn College. Formerly Biochemist, Children's Medical Division, Bellevue Hospital; Instructor, Department of Pediatrics, New York University College of Medicine. Cloth. Price, $8. Pp. 684, with 73 illustrations. New York: The Macmillan Company, 1941.

This volume, the "Biochemistry of Disease," is an outstanding contribution to clinical medicine. Biochemistry is taught in the medical school when the medical student has had no clinical experience, and hence he is unable to appreciate fully its significance to medical practice. A book such as this one, therefore, is of great value to the physician who desires to keep in touch with the many advances made in this field. The authors have attempted to apportion their presentation of the biochemistry of the various diseases in accordance with their clinical significance. An excellent bibliography is given at the end of each chapter. Of special interest are the chapters on diseases of the blood, disorders of the liver and biliary tract, diseases of muscle, diseases of the male gonads, and miscellaneous disorders of nutrition. The book is well illustrated and written in plain understandable terms. It is a book that should be in the library of every physician.

NUTRITIONAL DEFICIENCIES: DIAGNOSIS AND TREATMENT. By John B. Youmans, A. B., M. S., M. D., Associate Professor of Medicine and Director of Post-Graduate Instruction, Vanderbilt University Medical School, Nashville. Assisted by E. White Patton, M. D. Cloth. Price, $5. Pp. 385, with 16 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1941.

Today the vitamins are having their "innings." So much has been written both in scientific and lay literature that one appreciates the need for a discriminating textbook on this important subject. The present volume is an answer to such a need. The present status of deficiency diseases is made available in well planned chapters. Each well known vitamin deficiency is dealt with separately from the standpoint of its history, pathology, incidence, signs and symptoms, diagnosis and treatment. Special chapters on laboratory methods for diagnosing deficiency diseases, food factors as a source of vitamin supply and other valuable information are especially helpful.

OUR SEX LIFE: A GUIDE AND COUNSELLOR FOR EVERYONE. By Fritz Kahn, M. D. Translated from the German by George Rosen, M. D. Second Edition. Cloth. Price, $5.75. Pp. 459, with 41 illustrations. New York: Alfred A. Knopf, 1942.

This book is probably one of the best textbooks on the important subject of sex. The author is a well known sexologist whose writings have been sane and practical in contrast to many pseudoscientific and slipshod books which have cluttered the bookstands and undeservedly found their way into the libraries of the laymen. The book is well planned: Part I deals with the sexual functions in the male and female in which very satisfactory discussions of the anatomy and physiology of the sexual organs are presented. Other parts deal with the sexual act, the hygiene of sexual intercourse, problems of conception, birth control and sterility, disturbances of sex life, impotency, frigidity, and other sexual disorders. Diseases of the sexual apparatus are considered frankly and intelligently. Moral and sociological aspects of sex are also given satisfactory consideration. This book should find a well deserved place in the library of home and institution.

THE ART OF SELF-CONTROL: HOW TO MAKE YOUR HABITS WORK FOR YOU. By Ralph A. Habas. Cloth. Price, $2. Pp. 284. New York: Reynal & Hitchcock, 1941.

The Behavioristic School of Psychology emphasizes the effects of environment and teaching upon human behavior. Maladjusted adults give ample evidence of having been afflicted with bad habit formation. According to this author good habit formation predisposes to wholesome personality development. The moral lesson is obvious—if it works.

FOUR TREATISES OF THEOPHRASTUS VON HOHENHEIM CALLED PARACELSUS. Translated from the Original German, with Introductory Essays by C. Lilian Temkin, George Rosen, Gregory Zilboorg and Henry E. Sigerist. Edited, with a preface by Henry E. Sigerist. Publication of the Institute of the History of Medicine, The Johns Hopkins University. Second Series: Texts and Documents. Volume I. *Cloth. Price,* $3. *Pp.* 256, *with portrait. Baltimore: The Johns Hopkins Press,* 1941.

Paracelsus was undoubtedly one of the most forceful personalities in a period that produced many great characters, and whoever wants to have a picture of the Renaissance cannot ignore him. He died four hundred years ago in Salzburg, embittered, poor and misunderstood by the world. This volume presents English translations of four treatises that illustrate four different aspects of his work. The first, "Seven Defensiones, the Reply to Certain Calumniations of his Enemies" is probably Paracelsus' most personal work. It is a passionate justification of his character, activities and views. The second is a translation of a study on the diseases of miners. It is the first monograph ever written on the diseases of an occupational group. The third treatise is "The Diseases that Deprive Man of his Reason, Such as St. Vitus' Dance, Falling Sickness, Melancholy and Insanity and their Correct Treatment." There are many interesting treatments in this treatise such as the following: "If a choreic man or woman develops St. Vitus' dance through a voluptuous urge to dance—and this happens more frequently to women than to men, since women have more imagination and restlessness and are more easily conquered by the very strength of their nature—there is nothing better for expelling this than thoughts and actions against it. Their thoughts are free, lewd and impertinent, full of lasciviousness and without fear or respect. These thoughts may be expelled in the following way: shut the patients into a dark, unpleasant place and let them fast on water and bread for some time, without mercy. Thus hunger will compel them to adopt a different nature and different thoughts, so that the lasciviousness is driven out by abstinence." "Some think they would die if they could not act in such a way (singing, dancing, etc.) but it is not so. It is better to take a good stick and give the patients a good beating and lock them in as has been described above. It should be noted, however, that if they are beaten, such a rage arises within them that they may die of it; therefore, one should be careful to observe moderation. The best cure, and one which rarely fails, is to throw such persons into cold water."

The last contribution is a translation of a treatise: "A Book on Nymphs, Sylphs, Pygmies and Salamanders and on the Other Spirits." This book revives the personality of an honest man, a great physician and a staunch fighter for what he considered the truth. We can agree with the statement of Sigerist: "It is so easy to be orthodox and to reap honors by repeating what people expect and wish to hear. Progress, however, is achieved through the clash of ideas, and heretics like Paracelsus are a ferment without which there would be no life."

NEURAL MECHANISMS IN POLIOMYELITIS. By Howard A. Howe, M. D., Associate in Anatomy, the Johns Hopkins University, Baltimore, and David Bodian, Ph. D., M. D., Assistant Professor of Anatomy, Western Reserve University, Cleveland. Cloth. Price, $3.50. *Pp.* 244, *with illustrations. New York: The Commonwealth Fund,* 1942.

The subject of poliomyelitis is of paramount interest to the physical therapist. This book, however, is a collection of experimental studies on poliomyelitis produced in animals and deals primarily with the characteristics of the virus which attacks the central nervous system. Chapters on the portal of entry, the spread of the virus, and the specific reactions on the part of the nerve cells to the virus are clearly presented. Those interested in the subject of virus diseases will appreciate this splendid monograph.

THE 1941 *YEAR BOOK OF INDUSTRIAL AND ORTHOPEDIC SURGERY. Edited by Charles F. Painter, M. D., Orthopedic Surgeon to the Massachusetts Women's Hospital, and Beth Israel Hospital, Boston. Cloth. Price,* $3. *Pp.* 432, *with* 353 *illustrations. Chicago: The Year Book Publishers, Incorporated,* 1941.

This volume culls from the mass of literature on orthopedic and industrial surgery what appears to present the soundest views of men competent to undertake newer surgical procedures and to interpret the current research for what it is worth.

The part on orthopedic surgery has sections on the osseous system, nerve diseases, paralyses, technic, osseous tuberculosis, tumors of the bones, gout, arthritis, fractures and dislocations, osteomyelitis and metabolic bone diseases. There are about sixty pages on industrial surgery and medicine.

Orthopedic and industrial surgery present many problems that apply to war surgery so that this volume is of special interest at this time. The author has performed an excellent work to collect in this limited amount of space a series of authoratative articles representing progress in this field during the last twelve months. It can be highly recommended.

THE PSYCHOLOGY OF THE PHYSICALLY HANDICAPPED. By R. Pinter, Jon. Eisenson and Mildred Stanton. Cloth. Pp. 391. New York: F. S. Crofts and Company, 1941.

The subject of the adjustment of the physically handicapped to the everyday problems of life is receiving more and more attention. These individuals, instead of receiving sentimentalities and pity should be considered in the same category with normal individuals inasmuch as most of them must enter into competition and social intercourse with their fellow beings. Although individual handicaps, such as blindness, deafness and muscular crippling, present special problems, in general the physically handicapped must learn to compensate by virtue of assets rather than be victimized by his disabilities. His emotional problems must be faced and dealt with in the light of our present-day understanding of human behavior.

METHODS OF TREATMENT IN POSTENCEPHALITIC PARKINSONISM. By Henry D. von Witzleben. Preface by Theodore J. C. von Storch, Associate Professor of Neurology, Albany Medical College, Albany. Cloth. Price, $2.75. Pp. 164. New York: Grune & Stratton, 1942.

The treatment of Parkinsonism has been an unhappy chapter in neurology. Damage to the central nervous system, more especially to the extrapyramidal motor cells and pathways, is the basis for this well known clinical syndrome. The fact that there is no regeneration in the central nervous system precludes against a cure for this malady. Treatment, therefore, has been essentially palliative. For many years drugs belonging to the atropine series, such as hyosciene and stramonium, have been most widely prescribed. More recently a vinus extract of the root of Bulgarian belladonna has been prized very highly for the treatment of this disease. The author has written a monograph covering the whole subject of the treatment of Parkinsonism in which he describes not only the medical therapy but also surgical, heat and X-ray treatment.

DISEASES OF THE BASAL GANGLIA. Edited by Tracy J. Putnam, M. D., (Chairman), Angus M. Franz, M. D., and S. Walter Ranson, M. D. Cloth. Price, $10. Pp. 719, with 268 illustrations. Baltimore: The Williams and Wilkins Company, 1942.

Each year the Association for Research in Nervous and Mental Diseases selects a topic for its symposium. The subject of the basal ganglia was wisely selected and as a result there is available now this excellent treatise. There are nineteen chapters which deal with the anatomy, physiology, pathology and surgery of the extrapyramidal system, each written by an outstanding investigator. Those who are familiar with the previous volumes published through this association will find the 1940 symposium a worthy contribution to the series.

FROM CRETIN TO GENIUS. By Dr. Serge Voronoff. Cloth. Price, $2.75. Pp. 281. New York: Alliance Book Corporation, 1941.

The author of this book is known primarily as the result of his writings on rejuvenation based upon glandular transplantations. It is natural that so attractive a theory would find many curious ears. In the present volume Veronoff out-does himself by exploring the realms of genius. For entertaining reading the book may be highly recommended, but to the critical scientific mind much of the subject matter will be found to rival "Alice in Wonderland."

MENTAL HYGIENE FOR COMMUNITY NURSING. By Eric Kent Clarke, M.D., F.A.P.A., Director of the Psychiatric Clinic for Children; Professor of Psychiatry and Pediatrics, University of Minnesota Medical School; Formerly Associate Professor of Medicine and Director of the Division of Psychiatry, School of Medicine, University of Rochester, New York; Psychiatrist for Health Bureau, City of Rochester. Cloth. Price, $3.50. Pp. 262. Minneapolis: The University of Minnesota Press, 1941.

The physical therapist frequently comes in contact with patients who show evidence of mental illness or of conditions that may precipitate mental hygiene problems.

The chief concern of the physical therapist is the physical health of her patient, yet to accomplish the maximum in this it is necessary that she understand why the patient reacts to his illness as he does.

Doctor Clarke has brought to this volume the wisdom and insight gained from a long experience in helping others to meet the problems of mental health. While it is written primarily for the public health nurse, the material assembled here will help physical therapists and all those dealing with ill individuals to have a better understanding of their patients.

Books Received

THE HEARING OF SCHOOL CHILDREN: A STATISTICAL STUDY OF AUDIOMETRIC AND CLINICAL RECORDS. By Antonio Ciocco and Carroll E. Palmer. Monographs of the Society for Research in Child Development. Vol. VI, Serial No. 29, No. 3. Paper. Price, $1. Washington, D. C.: National Research Council, 1941.

SOCIAL INFLUENCES AFFECTING THE BEHAVIOR OF YOUNG CHILDREN. By Ruth Pearson Koshuk. Monographs of the Society for Research in Child Development. Vol. VI, Serial No. 28, No. 2. Paper. Price, $1. Washington, D.C.: National Research Council, 1941.

THE LIFE OF AN EXCEPTIONAL CHILD. Proceedings of the Seventh Institute on the Exceptional Child Under the Auspices of Child Research Clinic of the Woods Schools, A Private School for Exceptional Children at Langhorne, Pa., Tuesday, October 22, 1940. *Paper. Pp.* 61.

Convention Calendar

Date	Organization	Place
May 25-27	National Council of Catholic Nurses	Detroit, Mich.
June 2-4	Montana State Nurses' Association	Missoula, Mont.
June 3-5	American Orthopaedic Association	Baltimore, Md.
June 8-12, 1942	American Medical Association	Atlantic City, N. J.
June 15-19	Catholic Hospital Association of the United States and Canada	Chicago, Ill.
June 17-20	Washington State Nurses' Association	Longview, Wash.
June 17-20	Washington State League of Nursing Education	Longview, Wash.
June 17-20	Washington State Organization for Public Health Nursing	Longview, Wash.
June 19-27	Canadian Nurses' Association	Montreal, Quebec, Canada
September 9-12	American Congress of Physical Therapy	Pittsburgh, Penna.
October 19-23	American College of Surgeons	Chicago, Ill.

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By John S. Coulter, M. D., Assistant Professor of Physical Therapy, Northwestern University Medical School, Chicago.

No. 8, Clio Medica: A Series of Primers on the History of Medicine, Published by Paul B. Hoeber, Inc. Cloth. Pp. 142, with 15 illustrations. Price $1.50.

This book may be purchased through the Business Office of

The Physiotherapy Review, 737 N. Michigan Ave., Chicago, Ill.

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Annual Convention 1942

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June 28, 29, 30,

July 1, 2 and 3

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